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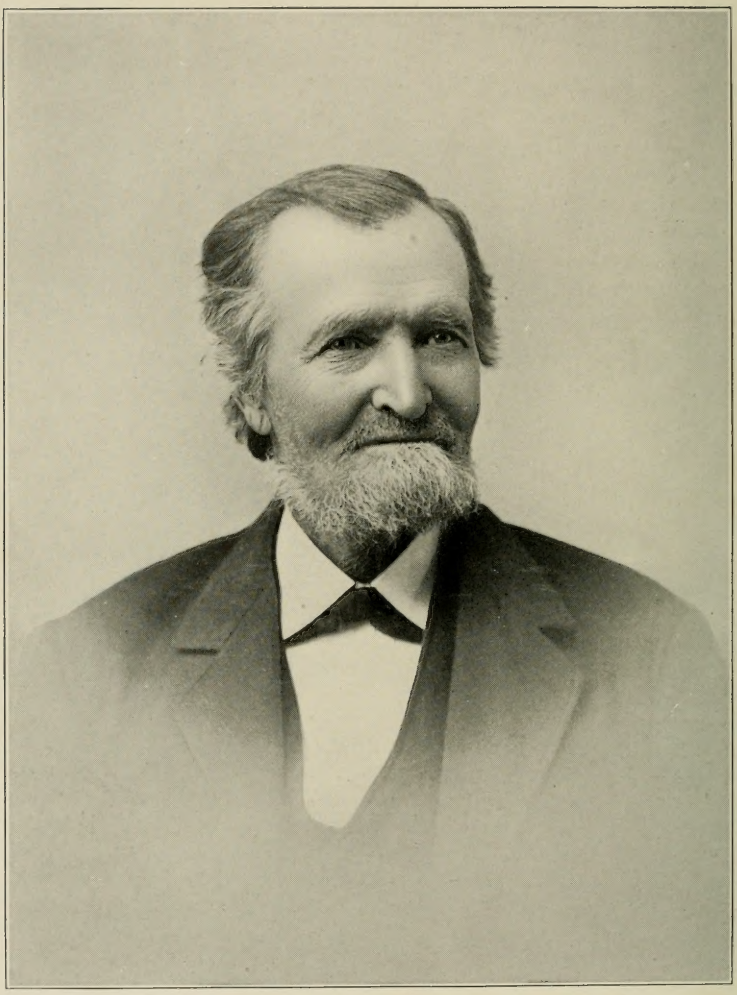

O. M. Lord.
Late of Minnesota City, Minn.
(From photo taken about 1885.)

Trees, Fruits and Flowers

—OF—

MINNESOTA.

1907.

EMBRACING THE TRANSACTIONS OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1906, TO DECEMBER 1, 1907, INCLUDING THE TWELVE NUMBERS OF THE "MINNESOTA HORTICULTURIST" FOR 1907.

EDITED BY THE SECRETARY,
A. W. LATHAM.
OFFICE AND LIBRARY, 207 KASOTA BLOCK.
MINNEAPOLIS, MINN.
Official Stenographer, A. G. Long, Excelsior, Minn.

VOL. XXXV.

MINNEAPOLIS:
HARRISON & SMITH CO., PRINTERS.
1907.

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v. 35
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THE MINNESOTA
HORTICULTURIST.

VOL. 35. JANUARY, 1907. No. 5.

In Memoriam.

ORVILLE M. LORD, MINNESOTA CITY, MINN.

Died July 21, 1906, aged 80 Years.

My father, Orville Morell Lord, was born in the town of China, Wyoming Co., New York, April 20, 1826, and died at Minnesota City, Minn., July 21, 1906. While in failing health for three years or more, he had a great desire to live until he passed his eightieth birthday. Very soon after his last illness came on, and we knew our beloved father would soon leave us for the life beyond. He sometimes remarked that his days of usefulness were over, and he longed for *rest*. Though a great sufferer from heart trouble for twelve weeks, he was patient and uncomplaining, as we had known him to be from our childhood.

A few days before his death, he said to me, "I have lived a long life, and have tried to live well, to do my *best*. As bright and beautiful as the light is of earth, I shall see a far more glorious light over there, and soon, I hope. Nothing counts in this life but *truth* and *doing right*. I have tried to do right."

Character is the life we live, the expression of our thoughts in words and acts. The above is an index to my father's real character. He was a man honored among men because of his practical knowledge of things worth knowing which are helpful to the world as well as to nearby friends and neighbors. His mind was stored with useful knowledge from good reading. Though naturally reserved, and not a "great talker," he was ever ready to answer questions on almost any subject of general interest concerning the home, the state or nation. He was a man of whom his neighbors of more than fifty years association can say, "There never was a more honorable, just and honest man to deal with in a business way than Mr. Lord." Not only his three sons, but any young man may well "honor" such a life and will do well

to leave such a record of eighty years, living in a world where many make a failure in the achievement of human happiness and call it "luck."

I know but few facts concerning my father's early life. His grandparents were from Connecticut, and his parents were born in New York state. When he was eleven years of age, they moved to Lapeer Co., Michigan, about fifty miles from Detroit. He attended school winters until he was sixteen, and then a term at a private school in Pontiac, about twenty-five miles from home, walking the distance both ways. At eighteen he was teaching in the district where he had been taught as a boy, and where as children he and my mother had played together.

As a young man, he lived a studious, busy life, teaching school four winters, helping on the farm, and assisting his father in his blacksmith shop, and the knowledge thus gained he made practical use of in later years. The first horseshoeing done in Winona County was by my father in the fall of 1852. He also brought the first span of horses into the colony known as Minnesota City.

As a young man at home, he was not only helpful on the farm and in the shop, but the special care taker of an invalid mother, whom he worshipped. He willingly learned to do "woman's work" in order to help his mother, thereby adding much to the comfort and happiness of his future home. He knew how to "do things," and a boy kind to his mother will be helpful to his wife. Father was certainly a model husband, ever kind and considerate. In case of sickness or necessity, he could cook a meal as well and quickly as a woman. His lifework seemed to be to *help himself* and to be *helpful to others.*

Father and mother were married at Oxford, Mich., Oct. 29, 1848, and had my mother lived a few months longer, they would have celebrated their golden wedding. Although the following lines were written in an hour of sadness and extreme loneliness, they express in language I cannot the loving loyalty of my father for the wife of his young manhood, and when left "alone" in old age how much he missed her. She died in August, 1897. After his death, I found these verses written with pencil on waste paper and know he had no thought of presentation. To me the lines are beautiful.

The wintry night is bright and clear,
The lively bells, the merry laugh I hear,
And old time songs, that once were dear,
Recall our happy meetings filled with cheer—
When we were young.

To me the outward look is cold,
I miss the sunshine of the days of old,
The magic hand I fain would hold
Of her whose happy smile was more than gold—
When we were young.

Beneath the orchard bloom we strayed,
And garlands with flowers and leaves we made,
And revelled in the fragrant shade,
Unmindful of the time and part we played—
When we were young.

Her home is in the better land;
Mine still lingers here by a single strand
Of silver cord, the loving band
That kindly, fondly bound us hand in hand—
When we were young.

The orchard trees now brown and sere,
Rejoiced in golden fruitage many a year,
Are emblems of our lives while here;
Foliage and bloom and fruitage follow near—
While we grow old.

The bells, the mirth, the songs, remain
In memory with a sad and deep refrain
Of youthful joy and mingled pain,
With buried hopes I would not wake again—
For I'm alone.

But brighter hopes now lead the way;
The end I cannot see, but humbly pray
For strength and light while here I stay,
And *faith* to share her home in endless day—
No more alone.

On May 1, 1852, father, in company with two other men (both died many years ago) landed on Wabasha prairie (now Winona) at about 10 o'clock P. M. Unable to get lodging, for the little cabin where they applied was filled to overflowing, the three men returned to the bank of the Mississippi River and passed the night on the sand, sleeping soundly wrapped in their blankets. At daylight, (Sunday) after breakfast, they started for Rollingstone, their destination. These three men were the first of the settlers to visit the country back of the bluffs of the Mississippi, where father finally located and which became his home for more than fifty years, though not continuously. In July, 1852, he brought from Michigan my mother and two brothers, Gerry and John, now dead; also bringing with them their household goods, a span of horses (driving part of the way), a cow and farming

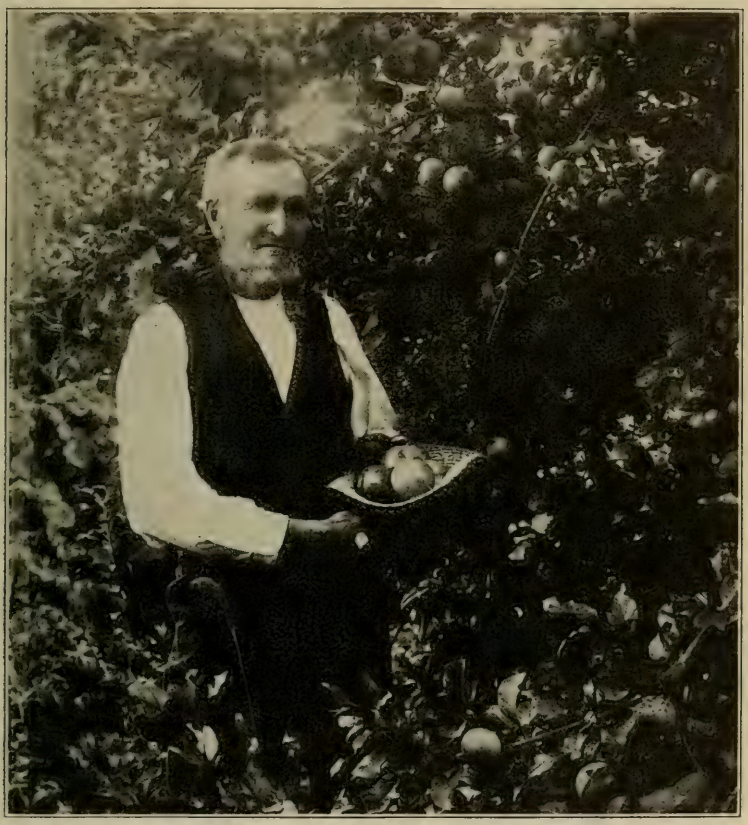
tools, well equipped for pioneer life. There are several pieces of furniture in the "old home" at the present time which were of the above "household goods." I possess two chairs made by Grandfather Lord, given to father and mother in 1848.

Father owned the first sawmill in Winona Co., which he built in 1854, and became familiar with the "pranks" of the famous Rollingstone stream. Before 1854, father opened the first lumber yard ever in operation in Winona Co., buying his lumber from mills up the Chippawa and bringing it to Minnesota City by raft. Lumber was not to be obtained at any price from a nearer-by point, and father was quick to see the urgent necessity for lumber in the building of the early homes. He was never idle. When not otherwise employed, he liked to fish and hunt but seldom did so for mere pastime. The game not needed for family use was sold to advantage, while other men were telling stories of the advantages "back east."

Father was a member of the territorial legislature in 1853-4, walking to St. Paul and returning home by the same route. At this time among the acts of which he secured the passage was the division of Fillmore Co. and creating Winona Co. of which the city of Winona was made the county seat. There was much opposition, but the outcome is a matter of record of the county history. He also secured the passage for a post-route from Minnesota City to Traverse des Sioux and was the successful bidder for carrying the mail once a month. Congress had passed an act granting to every mail contractor west of the Mississippi River the right to pre-empt one section of land for every twenty miles of his mail route. The time came when father was "land poor," and he passed many sections on to men seeking homes in a new country. At one time he owned the land where Eyota is located, and in later years he had some difficulty in perfecting titles, which required his presence in Washington for several weeks one winter, a visit he enjoyed aside from his anxiety regarding his business.

It really didn't "pay" to be a mail carrier in those days. The winter of 1854-5 was a cold one. Nearly three months it did not thaw on the south side of buildings. There were 129 consecutive days of good sleighing. From August until December father carried an empty mail bag, then one package was sent to Traverse des Sioux by the postmaster at Minnesota City. I learned the above items from an article written in 1899 by Mr. E. B. Drew, a lifelong friend of father's.

In 1861 father and mother moved back to Michigan living near Kalamazoo until 1864, when father bought back the first Minnesota home for $2,000 in greenbacks, which he had sold years before for $4,000 in gold. He and mother were never again "homesick" but contented and happy in the home both loved so dearly.



MR. O. M. LORD AMONG HIS APPLES.
From recent photograph.

In the winter of 1873-4 father was elected a member of the state legislature. In September, 1875, he was appointed superintendent of schools for Winona County, a position he held for eight years. At one time he could call by name every boy and girl of school age in the county. Under his instruction and helpful encouragement, many a young man or woman received his first reward as a county teacher, and was inspired to fit himself

for better work as a teacher of the young. At the present time, there are teachers in Winona city schools whom father started in the pathway of their lifework. He was always deeply interested in every line of educational work and was ever a student and a learner of new ideas. "Old fogy" could not be applied to him, for he thoroughly believed in progression.

Although father filled many other places of public trust which I have not referred to, I presume he was better known in his later years as a horticulturist. I cannot do him justice to write of his work in this line. There is so much that might be said without exaggeration, and it requires greater skill than I possess. I can only quote a few of the kind words of others regarding the work so dear to him.

He became a member of the Minnesota State Horticultural Society in 1884, and in December, 1899, he was made an honorary life member of the society. His old home place was also one of the experiment stations connected with the society. He took great pride in his work, and in making acceptable reports to the society, always something of profit to others.

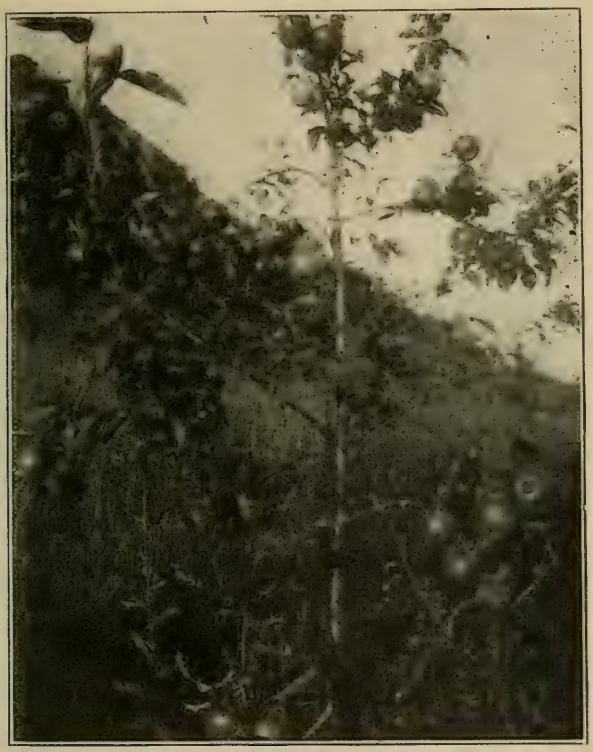
For some time he was connected with the Farmers' Institute as lecturer on horticulture; also horticultural editor of the "Farm, Stock and Home," as successor to Mr. John S. Harris.

As a successful plum grower, he was not only well known throughout the state, but he had the good will of other specialists north and south, east and west. He had a very extensive correspondence, much of it containing valuable information from a horticultural standpoint.

He cultivated a wild plum he found many years ago in the woods, on the bank of the Rollingstone creek near the old home. It was a great pleasure to him to believe he had brought it almost to a state of perfection. He named it the "Rollingstone." It is well spoken of by others interested in plum culture. I quote the following written by a friend of father's, and a visitor at his home in plum season. Regarding the "Rollingstone" he says: "Their productiveness surpassed anything I had ever seen, except the same variety seen at other places. The contrast between the Rollingstone and other varieties is marked. Here is the place to see and compare, for Mr. Lord has about every variety ever heard of in bearing. In fact, by reason of his long experience and superior judgment as a plum specialist, he stands at the head. In all my more than thirty years of search for plums, the things actually seen at his place by far surpassed everything ever before seen."

While it may be said father made a "hobby" of plums, he also was very devoted to experimenting with apples. A friend of many years, writes the following: "The Lord's L apple is a very pretty and nice little fruit of some value, as the quality is good and it keeps fairly until mid-winter. It is somewhat propagated by the nurserymen, and is this year to be found on the premium list of the Minnesota State Fair and the Horticultural Society."

Father was also a great lover of flowers. If he took a walk on the bluffs or through the fields, he seldom came home without a handful of wild flowers, because he loved them—and he could



A Lord's L apple tree, six years from the graft, loaded with fruit, on place of Mr. Frank Yahnke, Winona.

name any variety. To the last hours he lived, show him a rose or any favorite flower, he would smile and say, "How beautiful!"

There were seven children in the family—and only all together *one day* of our lives. The family circle was first broken by the

death of the youngest, a baby girl—and within five years the two sons died who came with father and mother from Michigan in 1852. Both were grown to manhood and an honor to their parents.

Four children are left to mourn a mother and father "gone before," three sons and a daughter; also an only sister in Michigan.

The dear "old home" will soon pass into the hands of strangers. It is likely father's labor of love will pass away like a dream, for fruit trees must have skilled care to live and thrive, but I doubt if one as faithful in loving service in so many ways of usefulness will soon be forgotten by the host of friends, some of more than fifty years' association.—Hettie Lord Shoemaker, Winona, Minn.

The above very fitting and loving tribute to the memory of Mr. Lord by his daughter, Mrs. Shoemaker, does not by any means emphasize as it should the value of Mr. Lord's life to the horticultural interests of the Northwest. Not only was he well known in this section and looked upon as an expert, but he had as well a national reputation in his acquaintance with the Americana plum. At the time that Mr. Lord first joined this society he was already in his maturer years and came at once into prominence from his long acquaintance with the growing of such fruits as could be successfully cultivated in his locality. From that time until up to the year of his death his name appears very frequently in the program and upon the minutes of the society. He was a regular attendant at the meetings and always occupied positions of importance in its deliberations. An examination of the index of the material contained in the reports of the society, to be found in this office, will at once show the prominence that he occupied in its councils.

Mrs. Shoemaker has referred to his connection with the Farmers' Institutes, where he served faithfully a number of years until failing health made it advisable that he should take better care of himself than was possible with the itinerary life of an institute worker. During this time he was occupying a position as a member of the Forest Reserve Board of this state, which place he filled continuously up to the time of his death. As an expert in his special line of northwestern horticulture, there is no one in the state now to fill his place. We miss him all along the line of horticultural experimentation and in the councils of the society—to say nothing of the affection which his acquaintance aroused and that continues a vital thing even though he is now taken away from us. He is most sincerely mourned as counselor and friend. Secretary.

ANNUAL MEETING, 1906, MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SECY.

There must necessarily be some sameness in the reports of our annual meetings as made year after year by the same writer, but the meeting itself as it runs along from day to day, with a great variety of topics and various incidents to break the even tenor of its movement, with the opportunity for renewing acquaintances, studying new and old varieties of fruit, etc., is very far from being monotonous. In fact, these meetings, one after another, grow upon the regular attendants as being more and more full of life and newness of interest.

The meeting which closed on the evening of Dec. 7th, at the twilight hour, with a larger attendance present than ever before at the closing ceremonies of one of the annual gatherings of the society, was more vital in interest well sustained to the end than any meeting of the society preceding it. There were more new things to talk about and new ways of looking at them, new problems to grasp and study, than at any previous meeting. With the diversified program, including a session devoted to nursery topics; one for the Woman's Auxiliary, covering mainly subjects touching horticulture and the social life; one for the State Forestry Association; one for the Plant Breeders' Auxiliary, a new association within the ranks of the society which is destined to do a large and important work for us; a calendar program reciting the various steps connected with the culture of orchard and garden during two of the summer months; with the question hour, two lantern-slide entertainments, cross-pollination illustrated with models and a large variety of topics touching many other points of practical value to horticulture, there was little opportunity for monotony or tiresomeness.

The first session of the meeting opened promptly at 9:45 with a rare musical selection by Mr. Trafford N. Jayne, of Minneapolis, followed by the invocation by Rev. C. S. Harrison, and then President Wedge's address, an inspiring production foreshadowing the spirit and purpose of the meeting. The program of the session proceeded on as arranged, without a slip or jar—and indeed this may be said also of all the sessions following, there being, of all the numbers on the program, only one article missing and but two formal reports, an extraordinary degree of perfection for so long and diversified a program. Each session was begun promptly on time to the minute, and with only one exception every number in the pro-

grams of the various sessions was carried out and completed before the adjournment of the session. It was a very full program, "as full as an egg," as one member noted, and if allowed to get behind could never have picked up.

An extraordinary attendance greeted the first session, nearly every seat in the auditorium being occupied, a fact that was exceptionally gratifying to the management and insured a most auspicious opening. The attendance was well maintained throughout the various sessions with an interest in all the proceedings fully in proportion to the number present.

The newspaper reporters have a practice of taking the program and writing up an account of the meeting without having been present; the interested reader may safely prepare such a report of this meeting for himself, it was so nearly in accord in all its details with the program. Special mention might be made of a few items of unusual interest, but to avoid the charge of discrimination where almost every item was worthy of special note, reference will be made only to the numbers presented by those coming for that purpose from without the state.

In the first session of the meeting the address by Rev. C. S. Harrison, of York, Nebraska, on the "Farmer's and Gardener's Unused Capital" was a brilliant setting forth of the opportunities open to every owner of a bit of ground and a home, an eloquent plea that these opportunities should not be lost. This address as well as all the articles later referred to,—and, indeed, all others presented at the meeting—will appear in full in some number of our monthly during the year.

Mr. Geo. J. Kellogg, the veteran strawberry grower of Wisconsin, in the same session gave us the benefit of his experience of over one-half a century in the strawberry field, words of wisdom from the standpoint of years and well worth heeding.

Mr. E. M. Sherman, of Charles City, Iowa, gave an address on "Hardy Ornamental Trees and Shrubs," a very full description of sorts most worthy of cultivation in this latitude, and something about methods of propagation, this subject having been presented in the nurserymen's session.

Mr. Wm. G. Scott, of Winnipeg, not being able to attend the meeting, sent us in his contribution of "Flowers in Manitoba," which should be carefully read by all the flower lovers among our readers.

Secretary C. H. True, of the Northeastern Iowa society, has evidently had much experience in spraying and gave us the benefit of this in the Thursday morning's session in a sensible paper

on "The Practical Results from Spraying." Unfortunately there was not sufficient time to discuss this paper, being at the close of the session.

Prof. Harry A. Huston, of Chicago, late Thursday afternoon gave us a real treat in a series of fine illustrations of various orchard scenes in Germany and other views of interest in that country. We are under special obligation to him for this lecture, as he made the trip from Chicago for no other purpose.

Mr. W. J. Moyle, the delegate from the Wisconsin society, read a lively paper on the cabbage industry in his locality, the only topic but one touching vegetable growing on the entire program.

Prof. J. C. Blair, of the Illinois State Experiment Station, has given much attention to the subject of cold storage for orchard fruits, and it was along this line that he gave a practical address at the Friday morning session, illustrated by charts in a way to bring out very clearly his thought. The illustrations used should be published with his address.

At the last session of the meeting, under the auspices of the Plant Breeders' Auxiliary, Prof. R. A. Emerson, of the Nebraska Experiment Station, presented an exceedingly interesting subject, "Early Maturity and Hardiness in Trees"; and in the same session Mr. Chas. G. Patten, the well known originator of new fruits at Charles City, Iowa, enlarged upon the question, "Can We Breed Hardiness into Our Trees and Plants?"

It is impossible to more than briefly refer to these topics contributed by our visitors. Nearly all the other subjects presented at the meeting were of equal practical interest, as will be found later when they appear in our monthly.

Important legislation is to be asked from the coming state legislature: First, for establishing a forestry school under the management of the State University in Itasca State Park, and, second, for the purchase and operation of an orchard experiment station in connection with the State Experiment Station. Both of these matters of special interest to our membership were presented at the meeting by Prof. Samuel B. Green and were heartily endorsed.

Another lantern-slide lecture by Prof. F. L. Washburn should be spoken of as being one of the unusual features of the meeting and was highly appreciated, his topic being "Insects Injurious to Horticulture and Their Parasites."

The question hour was a new feature in our meeting in the form in which it was offered, on one occasion presided over by Prof. Green and on the other by Mr. A. J. Philips. The fire of questions and answers was not picked up by the reporter, and only those who were present on those occasions will get the benefit of what took place there, except as passed on from them to others.

On account of the new and growing interest in plant-breeding, special lessons were given in the cross-pollination of flowers by Mr. Max Pfaender, of the State Agricultural College, using models for this purpose and explaining them individually to such as were interested in the subject. The large number who participated in this exercise indicates the growing desire for information in regard to it. There should be a lot of fruit blossoms crossed next spring as a result of these lessons.

The fruit list for 1907 was adopted as before with very slight changes. The new list will be found in this monthly. The committee on seedling fruits presented to the meeting some very fine specimens, and Mr. Elliot, the chairman, gave an extended and practical talk on the subject, illustrating various points with the specimens in hand.

There was in attendance a very full quota of delegates and other visitors from abroad. The following gentlemen were with us as representatives of our sister societies: Eugene Secor, Iowa State Society; C. H. True, Northeastern Iowa; L. A. Clemons, Northwestern Iowa; N. O. P. Synoground, South Dakota; W. J. Moyle, Wisconsin; Prof. C. P. Blair, Illinois; Prof. R. A. Emerson, Nebraska; all of whom were made honorary members for one year.

We were in hopes to have had Prof. N. E. Hanson with us, just back from a tour in Russia and Siberia, looking for new hardy fruits and grasses, in accordance with a postal card received from him December 3rd, mailed from Vladivostok, Siberia, dated November 3rd. A telegram from him sent from San Francisco Tuesday morning, however, showed us the impossibility of his attendance, which we regreted exceedingly.

The annual election passed off with the usual harmony, Prof. Samuel B. Green being elected president in the place of the retiring president, Mr. Clarence Wedge, who gracefully presented the name of Prof. Green as his successor. The close of the election showed no change in the executive board. Mr. Geo. W. Strand was elected treasurer, successor to Mr. A. B. Lyman, who has filled the position with entire satisfaction for six years.

A pleasant incident at the meeting was the presentation of the names of Mr. Frank Yahnke, Mr. Geo. J. Kellogg and Mr. Chas. F. Gardner, also that of Ex-Pres. Clarence Wedge, as candidates for honorary life memberships, which nominations were confirmed by a unanimous vote of the society.

There was a change in the decoration of the audience room from last year, which while simpler was also an improvement. Evergreen rope was festooned around the gallery and along the walls across the front of the audience room, and above the president's desk was placed the motto, "He who loves flowers will also care for Him." At another point upon the wall, facing the audience, was a tablet, "In Memoriam," followed by the names of many of our members who have died this year, the list being unusually large. This list will be found further on in this number in the annual report of the secretary. An oration in memory of these departed ones was delivered by Hon. S. M. Owen, at the Thursday afternoon session.

The fruit exhibit occupied the basement, as heretofore. A number of suitable mottoes hung upon the walls, and three long tables, with one against the back wall, were filled with apples of unusual size and beauty. The exhibit, however, was not as large as the two past years, which fact is easily accounted for by the light apple crop of the state. There was shown about 630 plates of named varieties, twelve plates of grapes, thirteen pecks of apples of different kinds, ten exhibits of canned plums and about one hundred plates of seedling apples. The exhibit of seedlings was considerably smaller than last year but averaged very much higher in size and quality, the exhibitors having learned by experience the futility of bringing to the meeting seedling fruits of little or no commercial value. The standard of excellence, adopted by the judges was higher than heretofore and resulted in giving larger proportionate amounts of the premiums offered to the fortunate prize winners. The premiums in all classes of fruit altogether amounted to $230.21.

Last but not least to be spoken of is the annual society banquet, at which one hundred and twenty-four sat down at the West Hotel on Thursday evening. The menu was all that could be desired, and as to the program here it follows, judge for yourself:

Toastmaster: P. V. Collins, Minneapolis.

Grace: Geo. J. Kellogg, Janesville, Wis.

1. Song. Trafford N. Jayne, Minneapolis.

2. Some joy for every day—if we must insist upon it. Roy D. Underwood, Lake City.

3. My pleasure, or "what you will"—in a suburban garden. S. A. Stockwell, Minneapolis.

4. An amateur horticulturist under the X-ray—his wife turns it on. Mrs. F. F. Farrar, White Bear.

5. Reading, Miss Fay Latham, Howard Lake.

6. 'Tis distance lends enchantment to the view—but this depends on what you've tried to do. R. A. Schutz, LeRoy.

7. The nurserymen of the west—their enterprise surpassed only by their modesty. Eugene Secor, Forest City, Iowa.

8. Song. Trafford N. Jayne, Minneapolis.

9. The joys of memory—these are things that endure. C. S. Harrison, York, Neb.

Reading (by request). Miss Fay Latham.

Every number on this program was presented, and every minute of the evening enjoyed to the full. No member should miss the annual round-up at the banquet; it is always the crowning event of the annual meeting.

AWARD OF PREMIUMS, ANNUAL MEETING, 1906, MINNESOTA STATE HORTICULTURAL SOCIETY.

GRAPES.

	Exhibitor.	Premium.	Amount.
Collection	Gust Johnson, Excelsior	First	$5.00

A. BRACKETT, Judge.

APPLES.

Collection	Frank Yahnke, Winona	Third	$2.00
Collection	J. A. Howard, Hammond	First	6.00
Collection	W. L. Parker, Farmington	Second	4.00

DEWAIN COOK, Judge.

APPLES NOT IN COLD STORAGE.

Varieties.	Exhibitor.	Premium.	Amount.
Peter	S. R. Spates, Wayzata	First	$0.50
Peerless	"	Second	.25
Patten's Greening	J. O. Weld, Mound	Second	.25
Okabena	"	First	.50
Thompson's Seedling	S. H. Kenney, Waterville	First	.50
Missing Link	"	First	.50
Pewaukee	"	First	.50
Malinda	"	Second	.25
Jewell's Winter	Nils Anderson, Lake City	First	.50
Fameuse	"	First	.50
Scott's Winter	"	Second	.25
Utter	"	First	.50
Walbridge	"	First	.50
Ben Davis	Frank Yahnke, Winona	Second	.25
Lord's L.	"	First	.50
Sugar Loaf	"	First	.50
Yahnke	"	First	.50
Wolf River	"	First	.50
Patten's Greening	J. A. Howard, Hammond	First	.50
Anisim	"	Second	.25
N. W. Greening	"	First	.50
McMahon	"	Second	.25
Giant Swaar	"	First	.50
Golden Russet	"	First	.50
Grundy	"	Second	.25
Haas	"	First	.50
Jewell's Winter	"	Second	.25

Judson	"	First	.50
Longfield	"	Second	.25
Newells	"	First	.50
Rollin's Prolific	"	First	.50
Scott's Winter	"	First	.50
Walbridge	"	Second	.25
Ben Davis	H. H. Pond, Minneapolis	First	.50
Peerless	"	First	.50
Grundy	"	First	.50
Minnesota	"	First	.50
Faribault	"	First	.50
Wealthy	H. H. S. Rowell, Excelsior	First	.50
Hyslop	"	First	.50
Peter	Thos. Redpath, Wayzata	Second	.25
Brett	"	First	.50
McMahon	"	First	.50
Wolf River	"	Second	.25
University	"	Second	.25
Longfield	"	First	.50
Anisim	"	First	.50
University	H. L. F. Witte, Minnetonka	First	.50
Lyman's Prolific	"	First	.50
Hibernal	Thos. Talbot, Wayzata	First	.50
N. W. Greening	"	Second	.25
Malinda	"	First	.50
Wealthy	"	Second	.25
Repka Malenka	"	First	.50
Utter	J. A. Howard, Hammond	Second	.25
Hibernal	W. L. Parker, Farmington	Second	.25
Cross	"	First	.50

W. L. PARKER, Judge.

APPLES IN COLD STORAGE.

Varieties.	Exhibitor.		
University	P. H. Perry, Excelsior	Second	.25
Okabena	"	Second	.25
Gideon	"	First	.50
Brett	"	Second	.25
Charlamof	"	First	.50
N. W. Greening	"	Second	.25
Ben Davis	"	First	.50
Wealthy	"	First	.50
Duchess	"	Second	.25
Christmas	W. L. Parker, Farmington	Second	.25
Peerless	Gust Johnson, Excelsior	First	.50
Repka Malenka	"	First	.50
Transparent	E. A. Farmer, Minneapolis	First	.50
Kaump	J. A. Howard, Hammond	First	.50
N. W. Greening	C. C. Selvig, Willmar	First	.50
Cross	W. L. Parker, Farmington	First	.50
Hibernal	J. A. Howard, Hammond	Second	.25
McMahon	"	First	.50
Patten's Greening	"	Second	.25
Wolf River	"	Second	.25
Brett	Thos. Redpath, Wayzata	First	.50
Plumb Cider	J. A. Howard, Hammond	Second	.25
Rollin's Prolific	"	First	.50
Scott's Winter	"	First	.50
St. Lawrence	"	Second	.25
Sugar Loaf	"	First	.50
Utter	"	First	.50
University	"	First	.50
White Pigeon	"	First	.50
Walbridge	"	First	.50
Yahnke	"	First	.50
Golden Russet	"	First	.50
Grundy	"	First	.50
Haas	"	First	.50
Hutchin's	"	First	.50
Iowa Beauty	"	Second	.25
Jewell's Winter	"	First	.50
Judson	"	Second	.25
Lord's L.	"	First	.50
Longfield	"	First	.50
Malinda	"	Second	.25
Newell's	"	First	.50
Peter	"	Second	.25
Anisim	W. L. Parker, Farmington	Second	.25
Okabena	"	First	.50
Iowa Beauty	"	First	.50
Malinda	"	First	.50
Ames	"	First	.50
Wolf River	"	First	.50
Talman Sweet	"	First	.50

Zuzoff	"	First	.50
Fameuse	"	Second	.25
Hibernal	"	First	.50
Newell's	"	Second	.25
Scott's Winter	"	Second	.25
Borovinca	S. R. Spates, Wayzata	First	.50
Duchess	"	First	.50
Anis	J. A. Howard, Hammond	First	.50
Anisim	"	First	.50
Ben Davis	"	Second	.25
Borovinca	"	Second	.25
Christmas	"	First	.50
Fameuse	"	First	.50
Forsberg	"	First	.50
Giant Swaar	"	First	.50
Gilbert	"	First	.50
Wealthy	"	Second	.25
Patten's Greening	W. L. Parker, Farmington	First	.50
Judson	"	First	.50
Gilbert	"	Second	.25
McMahon	"	Second	.25
Repka Malenka	"	Second	.25
Plumb Cider	"	First	.50
St. Lawrence	"	First	.50
Peter	"	First	.50
Gideon	"	Second	.25
Charlamof	"	Second	.25
Antonovka	"	First	.50
Haas	"	Second	.25
Longfield	"	Second	.25
Peerless	"	Second	.25

DEWAIN COOK, Judge.

PECKS OF APPLES.

Varieties.	Exhibitor.		
N. W. Greening	Frank Yahnke, Winona	First	4.00
Wealthy	J. A. Howard, Hammond	Second	3.00
Patten's Greening	"	First	Special
N. W. Greening	"	Second	3.00
Wealthy	H. H. S. Rowell, Excelsior	Third	2.00
Patten's Greening	Gust Johnson, Excelsior	Second	3.00
Wealthy	H. W. Shuman, Excelsior	First	Special

O. W. MOORE, Judge.

EARLY WINTER SEEDLINGS.

Moran	A. J. Philips, W. Salem, Wis.		2.82
Scott W.	"		3.04
	"		1.88
Windorf	Nils Anderson, Lake City		3.04
	J. A. Howard, Hammond	First	3.95
No. 3	H. H. Pond, Minneapolis		2.35
	L. A. Clemons, Storm Lake, Iowa		3.78
	"		2.84
Mahogany	Wyman Elliot, Minneapolis		3.78
Prosser's Winter	L. W. Prosser, Le Roy		3.78
Swedish Greening	V. A. Neil, Minneapolis		1.88
	M. L. Gjestrum, Mankato		2.60
	Chris Jensen		1.88
	Edwin Bonde, Cottonwood		2.35

SAMUEL B. GREEN, Judge.

LATE WINTER SEEDLINGS.

	J. S. Decker, Austin		10.00
Prosser's Winter	L. W. Prosser, Le Roy		8.50
Prosser's No. 2	"		7.00
	G. A. Anderson, Renville		6.50
	Chris Jenson, Albert Lea		5.00
	Chas. Heck, Minneiska		7.50
	G. W. Coates, Rich Valley	Special	10.00
Keep till June	Mrs. M. A. Knowles, Excelsior		7.00
No. 21	A. B. Lyman, Excelsior		5.00
Evelyn	H. B. Tuttle, Tomah, Wis.		8.50
½ Pk. Late Winter Seedling	J. S. Decker, Austin	First	Special

WYMAN ELLIOT, Judge.

RECIPES FOR CANNED PLUMS.

Ocheeda	Mrs. C. W. Merritt, Winona	First	10.00
Wyant	J. A. Howard, Hammond	Fourth	4.00
Surprise	Mrs. A. Brackett, Excelsior	Second	8.00
	Miss Mary Moeser, Minnetonka	Third	6.00
Surprise	E. A. Farmer, Minneapolis	Fifth	2.00

MRS. ANNA B. UNDERWOOD,
MRS. M. A. KNOWLES, Judges.

ANNUAL MEETING, 1906, OF PLANT BREEDERS' AUXILIARY.

CLARENCE WEDGE, ALBERT LEA, SECY.

The first meeting of this "Inner Circle" of our State Horticultural Society occupied the greater part of the Friday afternoon session and was in every respect exceedingly encouraging and gratifying to those interested in the success of this new movement. It was very appropriately preceded by a lesson in hand pollination, given by Mr. Max Pfaender, of the School of Agriculture, illustrated with beautiful enlarged models as well as with the real flowers, which was given the closest attention by a large group of interested members. It is to be hoped that these lessons may become a permanent feature of the winter meetings, and possibly an hour of such work done in the open with the actual flowers might be made a useful addition to our short summer program.

President J. M. Underwood in his address brought to the attention of plant breeders the value of a plant register kept on lines similar to those of the herd registers of the animal breeders. Such a register would in time serve a valuable purpose in giving plant breeders a knowledge of the "blood lines" combined in the individuals with which they may be working.

The report of the secretary showed a membership of sixty-eight gathered during the year, and a general success with the seed distributed by the society. Nearly all the members are working on the apple problem, but the plum and lesser fruits are occupying the attention of a goodly share of the members also.

The program was of exceptional interest and strength, "breeding for hardiness," in its broad sense, being the subject given most attention. As a closing number Prof. Samuel B. Green gave a resume of the plant breeding work undertaken by the central station during the past year, at the close of which by a unanimous rising vote the society endorsed a resolution asking the legislature to appropriate a sum sufficient to buy and maintain a tract of land to be used by the horticultural department of the university for plant breeding purposes.

The retiring officers were unanimously re-elected. And when the president called for volunteers to join in the good work of the society, over forty responded by rising to their feet and giving

their names to the secretary, making a total of 123 members of the horticultural society enrolled in this crusade for "new and better fruits."

As a fitting close to this interesting and eventful session nearly a bushel of magnificent premium apples were brought up from the fruit room and distributed among the members, allowing two specimens to each one who would agree to plant the seed thereof.

ANNUAL MEETING, 1906, WOMAN'S AUXILIARY.

MRS. ANNA B. UNDERWOOD, LAKE CITY, SECY.

The members of the Woman's Auxiliary of the State Horticultural Society met Thursday p. m., Dec. 6th, at the call of the president. The following officers were elected for the ensuing year: President, Miss Emma V. White, Minneapolis; Vice-President, Mrs. I. E. Richardson, New Brighton; Treasurer, Mrs. L. R. Moyer, Montevideo; Secretary, Mrs. Anna B. Underwood, Lake City.

After discussing the work of the preceding year, the auxiliary outlined the work for the coming year to be a general effort to get in touch with the improvement associations of the state, and the secretary was instructed to take such measures as would bring this about.

SAVING APPLE SEED.

GEO. J. KELLOGG, LAKE MILLS, WIS.

As you eat apples, save the seed of each kind, putting them in an open envelope, and when that kind is gone or the season closed, put them into a little bag or rag tied and securely marked, each kind by itself, and if you know the names of the other varieties of trees surrounding the tree that bore your apple seed make a note of that; it will help in judging of the crosses.

Before cold, freezing weather is gone in March, put these bags of seed into water, soaking for three days, and then put them out and freeze them. Then put them in damp sand, and don't let them dry or get soaked. Plant them in the best of prepared soil three-quarters of an inch deep and cover only with sand mixed with light soil. Keep your record, and may you win some of the prizes that are offered by this society.

PRESIDENT'S ANNUAL ADDRESS.

CLARENCE WEDGE, PRESIDENT, ALBERT LEA.

Fellow Members: It is with rejoicing and feelings of profound gratitude to the Good Father above that we assemble in this our fortieth annual convention. As the feast of the Passover brought together the scattered families of the ancient Hebrews in one great tribal reunion, so has this December week become the great festival whereunto all the horticultural tribes come together in helpful fraternal fellowship, bringing with them the choicest fruits of their soil and of their experience. While this is not an elective assembly, and no salary is attached to its membership, and it hands down no laws to its constituency, it has seemed to me that, considering the interests which our five affiliated societies represent, we have functions to perform for the state scarcely less important than those of the legislature itself. It is for us to lead the way in every improved method in orchard and garden management; to encourage such adornment of the homes of our state as will make them lovable and their occupants contented and patriotic; to educate the public to a better understanding of the value and practical management of our great forest resources; to stimulate and encourage the breeding of better and more useful plants, from the tender garden annual to the giant timber tree; and, lastly, to teach more perfectly the art that saves from waste the thousands of tons of precious nectar that our fruits and flowers produce. These interests and many others related to them have been confided to the care of these affiliated societies.

How well those that have preceded us have done their work may be judged by the progress made during the forty years since our organization. In the evening of October 4, 1866, as the result of an especially encouraging exhibit of fruit made by our honored leader, J. S. Harris, at the state fair, this society was organized. The list of apples that made up that exhibit has fortunately been preserved, and out of it only one, a Vermont seedling that received little notice at that time, has proved of any permanent value. With the exception of the Duchess and Tetofsky, which shortly came into cultivation, and the obscure seedling above mentioned, all of our present excellent list of twenty-five varieties of apples has been since evolved. Even greater progress has been made in developing varieties of plums, for not one of the many excellent varieties we now enjoy were

known forty years ago. While the development of varieties in other fruits has not been so great I believe that it is safe to say that the varieties of today are of nearly double the usefulness of those of that period. In varieties of ornamental plants and trees wonderful progress has also been made; witness the perennial phlox and peony of today and those of forty years ago, and compare the lilacs and spireas and general nursery lists of the two periods.

In general methods we have made almost as much progress. We control sunscald by shading, blight by planting immune varieties. Diseases, in the face of which we were then helpless, we now control by spraying, which was then an unknown art. In forestry methods, but one was known or practiced, and that was, the most wasteful and wanton destruction. We look in vain through the earlier reports of our proceedings for one word that might hint of any thought of forest management. Today the president of the United States is a leading champion of the forest, with a following comprising the wealth and intelligence of the land, university presidents and leading business men now cheerfully filling the program of our forestry association. Forty years ago scientific plant-breeding had scarcely been thought of, and while now we are only beginning to realize the magnificent powers that the Creator has delegated to us, with all the beneficent results that may be expected to follow for mankind, we have been profoundly interested in what some of the prophets of this dispensation have accomplished and have gathered together a class of beginners to sit at their feet and learn the deeper lessons which lie close to the processes of life.

These are some of the thoughts that come to us as we look over the first forty years of the work of the society, and as we think of those who have signally contributed to this progress, many of them out of slender resources in education and wealth, we exclaim spontaneously, "Well done! Good and faithful servant."

But our chief concern is with the duties and opportunities of today. We begin this fifth decade of the life of our society with a membership of over two thousand, an annual appropriation of $2,500, a capital of good will and appreciation by the citizens of Minnesota and a confidence that comes from past successes. To what ends shall we use them, and what new means shall we employ?

First in present importance, let us stimulate by every means the new interest in plant-breeding. The membership of this auxiliary society has reached seventy without any personal solicitation or special effort; it should be at least doubled before the close of this meeting. There are none of us too old or too poor or too busy to be excused from contributing our mite of labor and enthusiasm for this uplift of our art. We have feared that the title, "plant-breeder," might sound too scientific or professional to the ears of some who would be very willing to select and plant a little good seed of fruit or flower each year. Let it be fully understood that such simple selection and planting is all that is required for membership or for reasonable expectation of valuable results, but that the more intelligent the breeding and selection of seed the more certain the hope of great advancement.

While upon this subject of plant improvement permit me again to urge the duty of appreciation for the work of those who are engaged in it. Our society and the fairs are doing much by way of premiums, but nothing will take the place of personal notice and friendly commendation. It costs nothing but the exercise of a decent Christian virtue, and I have no hesitation in saying that it will advance our interests more than any other effort that we can put forth.

While this work of helpful appreciation must in the main be a personal one, I am under the impression that the time has arrived when our society should undertake a systematic visitation of those who are engaged in experimental lines. Some years ago the seedling committee, and others especially delegated for the purpose, were occasionally commissioned to visit interesting points and report their observations to the society. I believe that so much good resulted from these sporadic efforts that the society would be warranted in appropriating a certain sum for systematic visitation in each congressional district. Whether this duty of visitation should be added to the work of the vice-president or a new office be created for the purpose should have the careful consideration of the society.

While we as individuals, and as a society, are endeavoring to carry on this important work, we should use our influence to the end that the horticultural department of our great agricultural college be fully equipped for doing the highest kind of scientific work with our horticultural plants. With all the buildings and apparatus now provided, there is a lack of land for planting and test-

ing that makes it almost impossible to carry out the full intent of the department. A tract of at least eighty acres of good orchard land, within twenty miles of the college, is a pressing necessity. Those of us who know Prof. Green personally need no further evidence that this trial orchard would have such able and practical management as would in the end save to the state many thousands of dollars. Knowing the facts in the case as we do, we should bring them personally before our lawmakers this winter, as we have opportunity, and thus give this measure the solid backing of the society.

As new things of value are produced, the question arises as to how they shall become the property of the public with due justice to the originator and the introducer. We know of numbers of promising varieties that are now withheld from the public on account of the great expectations which our large premiums and rumors of high prices paid for novelties has excited, thus preventing a needful test, endangering the life of the variety and blocking general progress. This is a large subject and a difficult one under our present system of laws and customs. From the best thought and observation that I have been able to give it, I would counsel greater liberality with the public. I confess that I have been largely influenced in this direction by the marked success of the man whom I regard the greatest plant-breeder of our section. No one has been freer with a new fruit than Mr. Patten with his great production, the Patten's Greening, and in both honor and money it has brought him a most satisfactory return. This is by no means a solitary instance. On the other hand I know of many cases where a close and tight policy has brought returns of its own kind. I am not in this to be understood as laying down any rule; it is a hard matter to adjust perfectly. The "dog in the manger" policy, however, demands unqualified condemnation. Those to whom nature has entrusted special treasures are in duty bound to share them in some way with mankind.

Attractive exhibitions of our products are great and important factors in agricultural progress. If we make any pretense of being better than mere hangers on in the communities in which we live, we will take an active interest in the management and exhibits of our county fairs. If but two or three horticulturists in each county should attend the preliminary meetings and actively assist in making their local fair a success, there would be no cause for complaint that the cattle and race horse

overshadow everything. Fruits and flowers tastefully arranged make extremely popular exhibits; if they are not given their proper place, our own littleness and inefficiency are but duly advertised.

In making exhibits of fruit we should never lose sight of the fact that attractiveness is the first and most important matter to keep in mind, for it is the education of the public through the eye that is the object of all such exhibitions, and nothing that will offend the eye should be given a place anywhere. Through whatever route it may come it is the money of the public that pays the premiums, and if our exhibits attract the public we need never fear but that the premiums will come our way. The policy of strict and undeviating honesty in all exhibits is the only safe and comfortable one to follow; neither judge nor superintendent is long deceived, and even a state fair premium is a poor thing to take in exchange for an honorable reputation.

There is no horticultural development within the past ten years of more importance to the state than the wonderful growth of our nursery interests. Before that time the larger share of nursery stock sold here was grown at points more or less distant, and much of it ill adapted to our climate. We now have within our borders several large establishments, supplied with the most complete modern facilities, growing large quantities of general nursery stock, and there has also sprung up in many places smaller nurseries that are supplying a good share of the local trade. This is a grand step forward. The very fact that a tree is grown within our state is not only prima facie evidence of its adaptability to our climate, but that it is free from many noxious diseases that seem to be gaining ground abroad.

In my address two years ago I mentioned the importance of a more careful selection of seed in growing ornamental and forest trees. Scarcely a month has passed since then that has not in some new way forced the importance of this matter upon my attention. Hardiness, rapidity and style of growth, character of foliage and value of timber are all controlled by it. Is it not a monumental pity that today the price and not the strain of seed is the controlling influence with seedling growers in making their purchases of seed? And this condition of things is sure to continue until the public has been educated to the idea that there is as much difference in Scotch pine, for instance, as there is in varieties of dent corn, and that, considering the longer period that the pine occupies the land, the matter of good seed is a hundred times more important.

One of the unsatisfied desires of the society has been that of reaching more of the children and young people of the state. We have talked of having horticulture taught in the schools, and we have debated the policy of plant distribution, but nothing definite has of late been attempted in this direction. The success attending competitive essays on horticultural topics presented to the Southern Minnesota Society has suggested the thought that a bronze medal together with a plant premium offered by our society to one successful essayist under sixteen years in each county where the superintendent of schools will agree to act as judge and where a specified number of schools shall compete, might not only turn the thought of thousands of children to out-of-door art but advertise our society among the people that we are wishing to reach.

In closing I wish to commend the spirit of unity and good fellowship that has for many years pervaded our councils. If there are any members that are trying to use the society for selfish ends, I am entirely ignorant of it, and I can say with absolute freedom that I have never been connected with an organization where the rank and file showed more of a spirit of unselfish loyalty to the cause for which it stood than our own horticultural society. We have had many able and earnest leaders, but without this loyalty of the many, their plans would have largely miscarried. And this spirit of unselfish loyalty appears to be spreading, and I am led to believe that we have crossed the threshhold of a period of great progress for humanity, when the spirit of liberty, equality and fraternity will lift our whole country to a plane of general substantial prosperity, when the true spirit of Christianity will achieve great triumphs in the hearts of men, when the wrongs and oppressions of the ages shall meet their final fate. We will therefore go on rejoicing in the light of this golden age, in the goodly work which has fallen to our hands, and endeavor to make this gathering count one step in the grand march of human progress.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee report that they heartily endorse the recommendations of President Wedge:

1st. That a sum of money not exceeding $200 be appropriated for the purpose of defraying the expenses of visiting the fruit growers of the state. The same to be expended under the direction of the executive board.

2nd. That the executive board be instructed to prepare a bill to be presented to the legislature urging the purchase of 160 acres of land suitable for experimental work in horticulture and in connection with work and under the direction of the horticultural department of the Minnesota State Experiment Station.

3rd. That the executive board be directed to provide bronze medals of some suitable design which, together with premiums in plants, shall be given to successful competitors, for essays, by boys and girls under sixteen years of age upon horticultural topics and according to suitable rules governing the same.

J. M. UNDERWOOD,
S. H. DRUM,
DEWAIN COOK.
Committee.

IMPROVEMENT OF OUR NATIVE PLUMS.

CHARLES F. GARDNER, OSAGE, IOWA.

I think it is generally conceded that the best way to improve our plums is to plant the kinds we want to cross in groups or, what is better, top-work the kind that is high in quality on the best hardy stock where it will be surrounded by interlacing branches and the blossoms will be in the best situation to favor cross-pollination. When this scion bears fruit, plant the pits of those plums that are best developed in size, quality and color. When these pits have made trees five years old, or have borne two crops of fruit, again make selection and top-work as before. Continue doing this, always using those trees for stocks that come nearest to your ideal plum. If you secure seedlings with domestic blood in them and they top-kill some hard winter, do not be discouraged but cut the tree down close to the ground and grow a new top. I have known the second growth to be much hardier and better than the first.

Our native plums seem to do better when growing in bush form. While the tree is young I think it best to pinch or cut back the leading branches and not to allow the tree to grow very high. They seem to respond the best when the soil is kept actually free from grass and weeds by shallow cultivation. After a few crops have been picked cover the ground with a good coating of manure and in the spring remove all that is coarse and would obstruct the cultivator.

ANNUAL REPORT, 1906, EXECUTIVE BOARD.

WYMAN ELLIOT, CHAIRMAN, MINNEAPOLIS.

The duties of the executive board the past year have not been very arduous.

December 8th, 1905, it was decided, at a meeting of the board, to increase the salary of the stenographer from ten to twelve and a half cents per folio.

The books of the secretary and treasurer were examined by Mr. J. A. Vye and found correct, and his report ordered filed

It was decided to raise the rates for advertising space in the Horticulturist thirty-three percent, and we think, on account of extended circulation and increasing demand for space, we should make a still further raise of, at least twenty-five percent.

It was decided that the apple seed secured from S. H. Kenney, from apples grown on Malinda top-worked on Duchess, should be turned over to Prof. S. B. Green for growing seedling trees on the experiment farm, to be used as premiums for securing new members, renewals of old members, etc.

It was also decided to offer additional prizes to encourage the growing of new seedling apples. In the February Horticulturist of 1906 was issued a supplement giving a detailed description of the new prizes for seedling apples, in which five hundred dollars was offered by the Minnesota State Horticultural Society. This supplement can be procured, by any one interested in seedling apple growing, by addressing A. W. Latham, Secretary, 207 Kasota Block, Minneapolis, Minnesota.

Your executive board met at the secretary's office June 25th, audited the books of the secretary and treasurer from December 4th to June 25th, marked them examined and approved, and transacted such other business as needed attention at that time.

I desire to make mention of a trip to the Owatonna Orchard Experiment Station, in company with Secretary Latham and Prof. S. B. Green. We examined the work there, so ably conducted under the supervision of the superintendent, Thos. E. Cashman. We were pleased to note the great improvement in methods pursued to develop better samples of fruit. The station is far too small to give each tree proper space for showing to best advantage its possibilities for improvement. I wish, at this time to add a word of praise for the fine collection of seedling apples exhibited by the superintendent of this station at our last state fair; it comprised over one hundred distinct va-

rieties, some of which possessed rare excellence. A part of these were put in cold storage and are now on exhibition in the fruit-room below.

We are pleased to note the increasing interest of our citizens in the development of better fruit for this and adjoining states and the great confidence manifested in the workings of this society.

While we, as officers of one of the most progressive horticultural societies in these United States, are bending every energy toward the development of better fruits, with the means supplied by our state legislature, we find, as the work progresses, there is increasing need of more adequate means for experimental work in the growing of seedling apples and other fruits. The development of our ever increasing fall exhibition of fruits, at the state fair, forces upon our attention the great need of better facilities for setting before the public eye the splendid products of our orchards, gardens and greenhouses; if we are to make a creditable display of our fruit and flower products we must have better facilities afforded by the State Agricultural Society. We need a modern, attractive horticultural building, surrounded by ornamental grounds embellished by shrubs, trees and flowers in a manner that will be of educational value to the vast throngs who make their annual pilgrimage to our state fair. These two things should receive the undivided attention of our members and officers present at this meeting and some method be suggested whereby we may accomplish the objects desired.

At a meeting of the executive board held Dec. 3rd the secretary's and treasurer's books, and vouchers accompanying the same for the past six months, were audited by a committee consisting of Messrs. Moyer and Underwood, and pronounced correct. After this the financial status of the society was discussed, and, as there was means available for further extension of our investigations for new fruits, it was thought wise to request the vice-presidents in each congressional district to start a canvass or systematic effort to secure information regarding any new seedling apples or other fruits of promise and value in their districts. Two hundred dollars or as much thereof as could be used to advantage was designated for this purpose.

We have been frequently reminded, the past year, that our ranks are being depleted, that not a few of our beloved members are passing over the "great divide," from whence no friendly greeting returns, but we have the encouraging thought that our loss is their gain.

SECRETARY'S ANNUAL REPORT, 1906.

A. W. LATHAM, SECRETARY.

Sixteen full years now I have had the pleasure of serving this society as its principal working officer, and the work, I assure you, has been a uniformly agreeable one. The close of every year marks an epoch in our lives, and as I bring to you the report of what has taken place in the life of the society in the year past I am prone to indulge somewhat in reminiscence, especially as I realize the far-reaching changes that have taken place in the society and in the scope and direction of its work during the period of sixteen years referred to.

The first year of my secretaryship was that of 1891, in which year there were on the roll one hundred ninety-nine annual members and forty life members. The changes in these lists will probably typify as much as anything else the changes that have come about in the society and in its work as a whole. Of the annual members of that year thirty-five are known to your secretary to have passed to the life beyond, and this list includes the names of many zealous in our work, too long a list to rehearse at this time. Seventy-six of the others are known to be still with us, leaving eighty-eight of whose present condition we are ignorant. Of the forty life members of that year, twenty-two are known to be no longer with us, and this list includes many whom we knew exceedingly well for their earnest work for the society. The last one of these to pass from us was Mr. Wm. Somerville, the date of whose death is the 21st day of October of this year. Mr. Mendenhall, another of this class, preceded him by only a few on days. Mr. Mendenhall's name appears as the seventh life member on the honorary life roll of our society.

The membership of the society has steadily increased from the date referred to until the membership roll for 1906 now stands at 2,027 annual members and 157 life members, a total of 2,174.

Sixteen years ago the society was printing and binding for distribution, according to the law enacted in 1887, 3,500 reports annually. The present year there were printed and bound for the society 2,700 volumes of our report, besides the 2,300 magazines, which are sent out to members and exchanges each month. The annual appropriation from the state has been increased from $1,000 to the sum of $2,500. The revenue of the society for memberships has, of course, increased proportionately to the increase of members. Another source of revenue not known in

the old days is the amount received from advertising in connection with our monthly, which this year amounted to $213.76.

The growth of the society may also be well typified in its library; in fact, sixteen years ago there was no library whatever except whatever surplus of Minnesota reports were being held for the benefit of new life members. Neither had the society an office except such as the secretary might make for it in his home. And it was not until the third year of my secretaryship that the nucleus of a library began, occupying a few shelves in a small office adjoining the office of Mr. Wyman Elliot. A year later the efforts for securing exchanges and volumes from other societies—the work of the society developing also in other ways—had borne such fruit that it seemed wise to enlarge the accommodations for the library and open an office, which was done by securing a room in the Kasota building, the one that is still occupied for these purposes.

The work of the society and the growth of the library, has much over-filled this office, and it has overflowed into a smaller room across the hall, and into storage accommodations elsewhere; but we are loath to go from a spot where our friends know where to find us, and so we stay on in the old place. The walls of the office are covered with book shelves, open shelves for newspapers and magazine exchanges, files of station reports, interspersed with portraits of many veteran members, etc. As Mr. Wyman Elliot says, "It is our work-shop," and indeed it has much that appearance.

Of late years, large interest has developed in the matter of growing new and improved varieties of fruits adapted to Minnesota, other methods of developing a local pomology having been tried more extensively during the earlier years of the history of the society. Some six or seven years ago $1,000 was offered for a certain seedling apple, and there are now forty-nine registered competitors for this prize (three new ones only for this year), none of them seeming so far to be within probable reach of it. A later development in the same direction, which promises interesting results, is the offer of $100 a year for the best winter seedling apple, for a succession of years, the first prize to be awarded in 1912, each seedling competing for this prize to be grown from a known parentage. There have been a goodly number of entries under this competition, amounting at this time to 155. The number is still increasing, and we anticipate that it will continue to

do so indefinitely. There is also a prize offered for a seedling plum, the personal offer of one of our members, Mr. Chas. M. Loring. There are only two or three competitors for this prize so far, but this is not to be taken as an index of the interest in originating improved plums, and we believe that something good will come of this offer.

In connection with the $100 prizes above referred to, there were sent out from the office last spring 317 lots of apple seed, and the most of the entries so far made have come from this source; many, however, who secured and supposedly planted this seed have not yet been heard from. This seed, as many of you know, was taken from apples of a winter variety, the Malinda, grown in the tops of Duchess trees, having been grafted therein by Mr. S. H. Kenney, in his home orchard, at Waterville. We surely have a right to expect some valuable fruits from this source.

No change has taken place in the number of our auxiliary societies this year, but the membership of some of them has increased. The North Dakota society is still on our list as an auxiliary, carrying this year about one hundred members, and it seems likely to remain there until such a time as they secure an appropriation from their own state to enable them to print a report.

I might refer briefly to the Plant Breeders' Auxiliary, organized within the ranks of the society, with a present membership of ninety-two, but I need not take time to go into this definitely, as it will be very fully referred to by the secretary of that organization in its proper place in this meeting.

We have had unusual accessions to our roll of life members this year, to the number of sixteen. There have been also unusual losses from this roll by death, nearly all of them older members, endeared to us by long years of service. This sad roll is made up of the following names: R. H. L. Jewett, O. M. Lord, Amasa Stewart, Wm. Oxford, R. J. Mendenhall, Wm. Somerville.

The lecturers with the farmers' institutes, Mr. Frank Yahnke, of old, and Mr. R. A. Schutz, who has been out now only one year, have done important work for the society and the horticulture of the state. The roster of members has been added to much in the usual way through their efforts, Mr. Yahnke sending in 116 and Mr. Schutz 258 names as members of the society. The ill-health of Mr. Yahnke is likely to interfere with his being in the institute work this winter, which we most sincerely regret, as his services in that position seem almost indispensable. Mr. Schutz,

we understand, is with the corps as heretofore. Both of these men are practical horticulturists and are able to tell what they know and are doing so with success.

No special changes have been made in the operation of the society trial stations, nor in demonstration of special results obtained from them, (not including in this statement the central station) except in the case of the orchard station at Owatonna, which has this year yielded a large number of fine looking varieties of seedling apples, some of which we are hopeful will prove to be of permanent value. A large exhibit of these was shown by the superintendent, Mr. Thos. E. Cashman, at the state fair, and some of them are being shown at the present meeting.

There has been a radical change in the methods of preparing the reports of the vice-presidents, resulting from the sending out of a list of questions by them to various prominent horticulturists in their respective districts, and we are hopeful of good results from this in the way of a more complete knowledge of fruit-growing conditions. It may be that further improvement in the work of these officers can be obtained by securing their co-operation in the matter of looking after seedling fruits, many of which of prospective value are coming to light in various parts of the state.

I might speak especially of the urgent need of an orchard station to be connected directly with the state experiment station, but as this matter will be referred to by other officers of the society I will do no more than mention it at this time.

The Gideon Memorial Fund remains the same as heretofore with the addition of some interest to the amount held. It is likely that the end of this year will find this matter put in shape according to the original purpose of the donors.

Of the Webb Fund there is still $57.36 on hand, and it will be used in the way intended by the donor, to decorate the horticultural offices at the state experiment station, as called for by the proper officer there. $15.14 has been expended from this fund this year.

I have the honor of presenting herewith a statement of the finances of the society at the close of the society year of 1906.

FINANCIAL STATEMENT, 1906.

RECEIPTS OF SECRETARY'S OFFICE.

Advertisements	$ 213.76
Life membership fees	194.00
Annual fees, 1905	4.00
Annual fees, 1906	1,827.00

Annual fees, 1907	177.00
Books sold	89.83
West. Pass. Ass'n, refund	11.00
Seedling premiums	36.15
Seed sold	36.36
Sundries	49.70
Total	$ 2,638.80

EXPENDITURES OF SECRETARY'S OFFICE.

Postage	$ 424.57
Express	26.91
Printing	197.82
Telephone	24.60
Gas	5.64
Assistance in office	295.00
Library	19.13
Premium books	209.15
Premium plants	89.57
Office rent	240.00
Reporting annual meeting, 1905	146.88
Expenses annual meeting, 1905	238.71
Expenses summer meeting, 1906	10.88
Expenses annual meeting, 1906	22.73
Expenses Forestry Association	32.25
Expenses, delegates	46.25
Insurance	8.00
Account Webb fund	15.00
Discounts on memberships	211.25
Expenses seedling committee	22.57
Ass't librarian	10.28
Cold storage of fruits	13.70
Sundries	56.99
Balance on hand	270.78
Total	$ 2,638.80

Deposited in Hennepin Co. Savings Bank	$ 1,298.31
Int. to Oct. 1, 1906	39.37
	$ 1,337.68
Balance in Society treasury	2,587.92
Balance in hands of secretary, Nov. 27, 1906	270.78
Total society funds	$ 4,196.38
Gideon Memorial fund on deposit Henn. Co. Bank	$ 253.05
Interest to Oct. 1, 1906	7.65
Total	$ 260.70

TREASURER'S ANNUAL REPORT, 1906.

A. B. LYMAN, TREASURER, EXCELSIOR.

Receipts—

1905.		
Dec. 5.	To balance	$ 1,855.17
Dec. 18.	A. W. Latham, Sec'y, receipts of office from June 20, 1905, to December 4, 1905	738.43
1906.		
March 1.	State treasurer's semi-annual allowance	1,250.00
June 25.	Rec'd A. W. Latham, Sec'y, receipts of secretary's office from Dec. 4, 1905, to June 25, 1906	1,871.53
Sept. 12.	State treas., semi-annual allowance	1,250.00

Expenditures—

1905.		
Dec. 18.	Order 141, Wyman Elliot, exp. delegate and seedling committee	$ 44.54
	Order 142, First Unitarian Church, rent	75.00
Dec. 26.	Order 143, Clarence Wedge, Pres., salary, '05.	25.00
Dec. 18.	Order 144, A. B. Lyman, Treas., salary, '05	25.00
	Order 145, A. W. Latham, exp. sec'y office from June 20, 1905, to Dec. 4, 1905	746.64
	Order 146, Wyman Elliot, seed of 16 barrels Malinda apples	72.00
1906.		
March 1.	Order 147, A. W. Latham, Sec., sal. 1st qr. '06	300.00
June 1.	Order 148, A. W. Latham, Sec., sal. 2d qr '06	300.00
June 25.	Order 149, A. W. Latham, Sec., exp. secy's office, from Dec. 4, 1905 to June 25, 1906	1,871.53
Sept. 1.	Order 150, A. W. Latham, Sec., sal. 3d qr	300.00
Dec. 1.	Order 151, A. W. Latham, Sec., sal. 4th qr	300.00
Dec. 3.	Order 152, Premiums an. meeting, 1905	201.75
Dec. 3.	Order 153, Premiums summer meeting, 1906	115.75
	Balance	2,587.92
		$ 6,965.13

There has been a most remarkable contemporaneous evolution of plums from the native species. Many varieties have been described, and they are grown over a wide range of country.

All our native plums, with few exceptions, require cross-pollination, but as a rule they are inter-fertile, so that any one variety will fertilize any other variety, providing the two bloom at the same time. This is of the greatest importance in adjusting the varieties to one another for cross-pollination. To determine which kinds bloom together, make very careful observations or look at the published tables for your latitude.

LIST OF FRUITS FOR MINNESOTA PLANTING.

Adopted by the Minnesota State Horticultural Society, Dec. 6, 1906.

For the Guidance of Planters in Minnesota.

APPLES.

Of the first degree of hardiness: Duchess, Hibernal, Charlamoff, Patten's Greening, Okabena.

Of the second degree of hardiness: Wealthy, Tetofsky, Malinda, Peerless, Northwestern Greening.

Most profitable varieties for commercial planting in Minnesota: Wealthy, Duchess, Patten's Greening, Okabena, Northwestern Greening.

Varieties for trial: Anisim, Yellow Sweet, Brett, University, Newell's, Lowland Raspberry, Iowa Beauty, Jewell's Winter, Yahnke, Gilbert.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent, Longfield.

CRABS AND HYBRIDS.

For general cultivation: Florence, Whitney, Early Strawberry, Minnesota, Sweet Russet, Gideon No. 6, Virginia, Transcendent.

Varieties for trial: Lyman's Prolific, Faribault, Shields.

PLUMS.

For general cultivation: DeSoto, Surprise, Forest Garden, Cheney, Wolf (freestone), Rollingstone, Wyant.

Most promising for trial: Ocheeda, New Ulm, Stoddard, Mankato, Brittlewood, Compass Cherry, Terry.

GRAPES.

First degree of hardiness: Beta, Janesville.

Second degree of hardiness: Moore's Early, Brighton, Delaware, Worden, Agawam, Concord.

RASPBERRIES.

Red varieties: Turner, Marlborough, Cuthbert, Brandywine, Loudon, King.

Black and purple varieties: Palmer, Nemaha, Gregg, Older, Columbian, Kansas.

BLACKBERRIES.

Ancient Briton, Snyder, Badger.

CURRANTS.

Red Dutch, White Grape, Victoria, Stewart, Long Bunch Holland, North Star, Pomona, Red Cross.

GOOSEBERRIES.

Houghton, Downing, Champion, Pearl.

STRAWBERRIES.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Mary, Clyde, Senator Dunlap.

Imperfect varieties: Crescent, Warfield, Haverland.

NATIVE FRUITS.

Valuable for trial: Dwarf Juneberry, Sand Cherry, Buffalo Berry, High Bush Cranberry.

Prof. Green: In apples we have thought best to make no change at all, and we offer the list as we had it a year ago—except that we thought it would probably be best to drop the Repka Malenka. It seems that is not being propagated and pushed at all; it is a small apple, and it is doubtful whether it is worth carrying any longer on this list: so we drop it.

In crabs we have made no changes, and in plums we have made no changes except we have dropped the Aitkin.

In grapes we have made no changes except that we have divided them into first and second degrees of hardiness. We have put the Beta and the Janesville on the list of "first degree

of hardiness," and in the "second degree of hardiness" we have the Moore's Early, Brighton, Delaware, Worden, Agawam and Concord.

In the case of raspberries there is no change.

These are the only changes in the fruit list that have been recommended.

The President: This is an important feature of the meeting, and there may be some questions some one would like to ask. Perhaps it would be well to get at it in this way: It has been suggested that we have a show of hands on varieties now, and I want you all to have a full understanding of what this means. We will go through the list in a rapid way. We cannot allow any discussion just now, and a show of hands will be a discussion in itself. The idea is to find out how many have had either experience or observation with the different varieties, and whether it has been favorable or unfavorable. Those who have had a favorable experience with a variety will raise their hands and those who have had an unfavorable experience will manifest it in the same way. That does not mean that you have planted the variety yourself, but means that you have some knowledge of it. This is not to indicate whether you consider it a good variety to plant generally, but whether in your particular locality you have had or observed a favorable experience.

A show of hands was accordingly had upon the varieties named below with the following result:

APPLES.

	Favorable	Unfavorable		Favorable	Unfavorable
Duchess	38		Longfield	15	11
Hibernal	28	6	N. W. Greening	14	7
Charlamof	6	5	Repka Malenka	1	6
Patten's Greening	27	2	Anisim	15	2
Okabena	15	5	Martha	2	22
Wealthy	35	1	Blush Calville	4	
Tetofsky	12	4	Mankato		2
Malinda	12	3	Brier Sweet	8	5
Peerless	7	13	Power's	1	1
Yellow Sweet	2	1	Jewell's Winter	4	
Brett No. 1	6		Yahnke	1	1
University	11		Gilbert	4	
Newell's Winter		1	Wolf River	12	3
Lowland Raspberry	3		McMahon		5
Iowa Beauty	11	2	Yellow Transparent	12	12

PLUMS.

De Soto	32	4	Mankato	5	2
Surprise	20	2	Stoddard	10	1
Forest Garden	20	2	Hawkeye	7	3
Cheney	4	11	Aitkin	1	25
Freestone Wolf	9		Ocheeda	7	2
Rollingstone	12	6	Brittlewood	3	
Wyant	19		Wood	2	
New Ulm	5	6	Compass Cherry	18	8
Miner	10	4	Wolf, Clingstone	5	

GRAPES.

Beta	8		Clinton	4	1

			CRABS.		
Florence	11		Meader's Red		
Sweet Russet	12	1	Winter	1	1
Minnesota	13	4	Dartt's Hybrid	5	3
Whitney No. 20	33	1	Orange Crab	12	5
Lyman's Prolific	4	3	Early Strawberry	27	7
Hiller Crab	1		Virginia	14	11
Pickett's Seedling	1				
			RASPBERRIES.		
King	12	2	Cumberland—		
Columbian	14	5	Blackcap	3	
Minnetonka Ir'ncl'd	5		Turner	13	4
Older-Blackcap	15	1	Miller	7	3
Gregg	7	5	Kansas-Blackcap	3	
Nemaha	10	1	Strawberry-		
Loudon	25	9	Raspberry	5	14
			CURRANTS.		
Perfection	5	1			
			STRAWBERRIES.		
Senator Dunlap	34	4	Splendid	13	5
Warfield	28	3	Bederwood	35	3

Mr. Elliot: I would like to ask who has had a good crop Virginia crab this year? Four voted yes.

Now who has had trees of bearing size that have not had any crop this year? Ten voted yes.

The President: The question has been raised in regard to the Minnetonka apple. I think we had better get at it in the same way. Now I want to ask how many have seen the Minnetonka apple fruit or have fruited it themselves? Ten voted yes.

How many of that number have seen it resemble the Longfield, in fact, think it is the Longfield? Three voted yes.

How many the Wealthy? Five voted yes.

How many the Duchess? One voted yes.

How many the Gideon? One voted yes.

Secretary Latham then referred to a communication he had received from Mr. Wilwerding, of Freeport, in which he stated that in his observation the Minnetonka turned out invariably the Peter, Wealthy or Gideon.

Question: "Is jack pine a good tree for a windbreak, also red cedar?"

Mr. Strand: Jack pine is one of the most rapid growing of all our evergreens, and is a variety that should be much more generally planted than it has been. One objection to the jack pine is the tendency of its leaves to hang on. They will hang on for a good many years, and for an ornamental tree it does not make a very good appearance. There is no tree that grows faster than the jack pine. There are two or three diseases that affect the red cedar of late, and that has had a tendency to not only make them cost a good deal more, but it has also had a tendency to discourage planting. It has not troubled us so much in the north, as the northern red cedar does not seem to be much affected by disease.

OFFICERS, 1907, MINNESOTA STATE HORTICULTURAL SOCIETY.

PRESIDENT.

Prof. Samuel B. Green.....St. Anthony Park

VICE-PRESIDENTS.

First Cong. Dist., J. W. Ramsden.....Homer
Second Cong. Dist., Wm. Pfaender, Jr.....New Ulm
Third Cong. Dist., J. M. Walden.....Northfield
Fourth Cong. Dist., T. T. Bacheller.....Forest Lake
Fifth Cong. Dist., W. S. Higbie.....Eden Prairie
Sixth Cong. Dist., Ellsworth Scranton.....Montrose
Seventh Cong. Dist., C. J. Orton.....Marietta
Eighth Cong. Dist., L. B. Arnold.....Duluth
Ninth Cong. Dist., Otto Kankel.....Fertile

TREASURER.

Geo. W. Strand.....Taylors Falls

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)

Wyman Elliot (Chairman), 3 year.....Minneapolis
Frank Yahnke, 3 year.....Winona
John P. Andrews, 1 year.....Faribault
Lycurgus R. Moyer, 1 year.....Montevideo
Clarence Wedge, 2 years.....Albert Lea
J. M. Underwood, 2 years.....Lake City

SECRETARY.

A. W. Latham.....Minneapolis

Office and Library, 207 Kasota Block.

Address business communications and all remittances to the secretary.

ASSISTANT LIBRARIANS.

LeRoy Cady.....St. Anthony Park
E. A. Cuzner.....Pillsbury Hall, Minneapolis

(The assistant librarians have charge of the surplus reports of the society, which are stored at Pillsbury Hall, State University and in Horticultural Hall, at the State Experiment Station.)

SUPERINTENDENTS OF TRIAL STATIONS, 1907.

Prof. S. B. Green (State Experiment Station).....St. Anthony Park
T. E. Cashman.....Owatonna
Dewain Cook.....Windom
A. B. Lyman.....Excelsior
F. I. Harris.....La Crescent
L. R. Moyer.....Montevideo
Mrs. Jennie Stager.....Sauk Rapids
J. S. Parks.....Pleasant Mounds
F. J. Cowles.....West Concord
F. B. McLeran.....Wrenshall
A. H. Reed.....Glencoe

STANDING COMMITTEES FOR 1907.

FRUIT LIST.

J. P. Andrews.....Faribault
G. W. Strand.....Taylors Falls
Thomas E. Cashman.....Owatonna

SEEDLING FRUITS.

J. M. Underwood.....Lake City
Wyman Elliot.....Minneapolis
Prof. S. B. Green.....St. Anthony Park
Dewain Cook.....Jeffers
Frank Yahnke.....Winona

ORNAMENTAL LIST.

Le Roy Cady.....St. Anthony Park
Mrs. N. S. Sawyer.....Excelsior
Max Pfaender.....St. Anthony Park

NOMENCLATURE.

Prof. N. E. Hanson.....Brookings, S. D.
Clarence Wedge.....Albert Lea
W. L. Parker.....Farmington

PUBLICATION.

Prof S. B. Green.....St. Anthony Park
Wyman Elliot.....Minneapolis
A .W. Latham.....Minneapolis

Secretary's Corner.

Plant Premiums for 1907.—The list of plant premiums for this year has been somewhat changed from that of the year before. It will be found in the pink folder and also on the inside page of the front cover of our monthly. Members should note that all orders for plant premiums must reach the secretary by April 1st to be honored. In every case select by number.

About the New Report.—The annual report for 1906 is now being sent out, but, as heretofore, it will not be mailed except upon special request to members living either in Minneapolis or at points nearby, as in most cases they can call at the office for the book, which saves the society the expense of postage and gets it into the hands of the member in better shape than if it went through the mails.

Delegates to So. Dakota and Wisconsin.—These delegates were appointed by the executive board when in session at the time of our annual meeting. Mr. L. R. Moyer will represent our society at the South Dakota meeting, to be held at Groton, Jan. 22 to 24, and Mr. Seth H. Kenney, of Waterville, is to represent us at the Wisconsin meeting, to be held in Madison at a date not yet known, probably early in February.

Rock County Horticultural Society.—Mr. C. E. Older, of Luverne, and other good friends of horticulture in that vicinity, have organized a local horticultural society under the above name. They start out with fourteen members, the president being Mr. C. E. Older and secretary Mr. N. R. Reynolds, also of Luverne. This latest organization of the local societies occupies the most southwesterly county of the state.

Annual Meeting So. Minn. Hort. Society.—This strong auxiliary society will hold its annual meeting at Austin, Jan. 16th to 18th, a three days' season, for which a suitable program has been prepared, covering the usual range of subjects at such gatherings. Members of the state society living convenient to the place of meeting should certainly make it a point to attend. Some of the most active members in the state society are connected with this auxiliary, and an interesting and practical meeting is certain.

The Proposed Orchard Experiment Station.—At the late annual meeting of the society a resolution was unanimously adopted asking the state legislature to purchase a suitable tract of land for an orchard experiment station and provide means for operating it. Something like 100 to 160 acres is needed for this purpose, and it should be located reasonably convenient for access from the State Experiment Station, in connection with which it would be operated, the work thereon being of course in charge of the professor of horticulture at the state station. The movement now under way in the horticultural society to originate varieties of fruits especially adapted to this section requires this station if it is to be carried on in any large or orderly way, and the expected results would warrant an expenditure infinitely greater than what would be required for the purpose. Every member of the society is deeply interested in the success of this plan, and every one can assist in forwarding it by verbal or written communication with members of the state legislature for their respective districts. Don't forget that upon your personal effort depends the success of this movement. The lawmakers want to know what their constituents wish them to do and will look to you for this information.

Plant Apple Seed for the Contest.—We hope that a large number of the members of our society are saving or will save apple seeds to plant the coming spring in connection with the seedling contest being carried on by the society. Seven prizes of $100 each are offered for the best apple seedlings, the first to be paid in 1912 and one annually thereafter. For full particulars address the secretary. If you can't secure the right kind of seed, you can get seedlings one year old as plant premiums from the society, without expense to you, which you can use for this purpose.

Have You Renewed Membership?—If you have not yet renewed your membership for 1907 you should receive with this number of the magazine a reminder in the shape of a bill which says, "Dr. To subscription for the Minnesota Horticulturist for 1907." This form of wording is required by the Post Office Department, but the member will understand that this bill refers to the membership in the society, and on receipt of the annual fee of $1.00 the usual membership ticket and bound volume for the preceding year will be sent—and don't forget you are entitled to two plant premiums.

Death of Charles Leudloff.—Notice of the death of Mr. Chas. Leudloff, Carver, Minnesota, came to the secretary about the time of the annual meeting but too late for mention in the December Horticulturist. Mr. Leudloff was one of the oldest honorary members of the society, his decease occurring at the advanced age of 81 years, on Sept. 3d last. He was made an honorary member in 1886 in recognition of the valuable work he was doing in experimenting largely with European fruits. This work he continued as far as he was able to consistent with his growing feebleness until the close of his life. He was one of the true pioneers of Minnesota horticulture.

Delegates to Iowa and Wisconsin.—Mr. O. W. Moore, of Spring Valley, represented this society at the annual meeting of the Iowa State Horticultural Society, which convened in Des Moines, Ia., on December 11 to 13. His report of the meeting came to hand promptly and is in press, but on account of the pressure of other matter it was found necessary to hold it over until the February number. The same can be said of the report of the Northwestern Iowa Society, held at Sioux City, Dec. 5 to 8, at which Mr. Joseph Wood, of Windom, was present as the representative of our society, and the report of the Northeastern Iowa Society by Mr. A. W. Massee, of Albert Lea.

Winter Protection for Young Seedlings.—Those of our members who have young seedling trees grown from seeds planted last year should note particularly that protection the first winter is an absolute necessity. If you have not already covered them with earth you can still protect them with some kind of mulch. Straw or other coarse material put on liberally will give them the protection needed. If as a result of this protection mice should get in and injure the trees, it would not matter, as they would sprout below the point of injury and come on and make a good growth next year just the same.

Decease of Wm. Somerville.—Notice of the decease of this prominent worker for many years in the horticultural society reached us just too late to find place in the December issue. Mr. Somerville died October 21st at the home of his son in Rochester, in this state. Few members of this society have reached the advanced age that has been granted to him, passing away, as he did, in his eighty-seventh year,—a long life well rounded out with useful service. A biography of Mr. Somerville will appear in an early issue of our monthly. He was an honorary life member, his election as such going back to 1893.

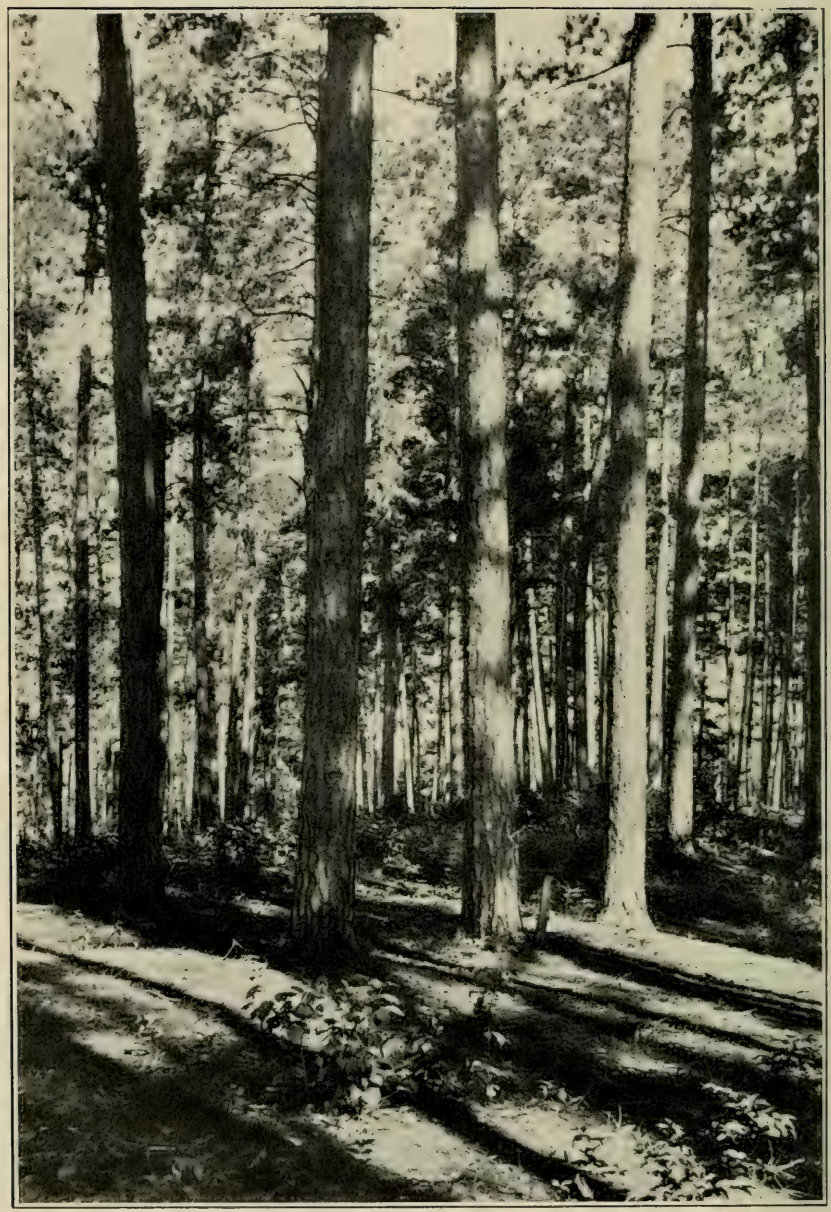
SELECT SEEDLINGS FOR PLANT PREMIUMS.—One of the plant premiums offered is "six apple seedlings grown from the seed of the Malinda top-worked on Duchess." These seedlings come from seed raised at Waterville, Minn., and they can be planted and the fruit grown from them entered in the contest for prizes of $100 each offered by the society, the first prize to be paid in 1912. Information as to this and other prizes will be found on page six of the 1907 folder and fuller particulars can be secured directly from the secretary. We wish that every member of the society might take part in this contest, and this would permit them also to become members of the Plant Breeders' Auxiliary.

DEATH OF LOUIS ANDERSON.—Information has just come to this office of the death of Louis Anderson, of Rochester, which occurred on Nov. 25th last. Mr. Anderson was the manager, and later years the proprietor, of the Martin W. Cook Nursery, at Rochester, with which he had been connected prior to the death of Mr. Cook. While for many years a member of the society, he was not a regular attendant at the meetings—although his loyalty to the society was assured, and at every opportunity he used his influence for the advancement of its interests. Mr. Anderson was a comparatively young man. He is well known as an exhibitor in the agricultural department at the state fair, to which he gave much assistance for many years.

SELECT YOUR PREMIUM BOOK.—The list of books offered to the members as premiums for securing new members has been considerably increased this year, as will be seen by consulting the little pink folder issued by the society, and at least one of these books should be secured by each one of the society as a reward for adding one or more names to the membership roll. You should look over this list, take the magazines of last year which you will no longer need—having them now in the bound volume—and go out among your neighbors and do missionary work for the society and for the cause it represents. It will pay you, and you would also have the reflection that you have done something practical to advance the interests for which the society stands. Now is the harvest time with us for the year.

HONOR ROLL FOR DECEMBER.—The following are the names of persons who have secured new members for the society for 1907 during the month of December.

F. N. Crosby, Hastings..... 4
C. C. Hunter, Minneapolis..... 1
Mrs. H. A. Boardman, Merriam Park 3
Geo. W. Strand, Taylors Falls..... 1
E. Bonde, Cottonwood..... 6
A. B. Franklin, Minneapolis..... 1
Alfred Terry, Slayton..... 1
A. O. Hawkins, Excelsior..... 1
Henry Flyen, Dawson..... 2
U. G. Herrick, Minneapolis..... 1
P. F. Tassie, Minneapolis..... 2
Wm. E. Bogert, Minneapolis..... 1
Chas. J. Rennacker, Detroit..... 1
Le Roy Cady, St. Anthony Park.... 1
R. H. Pendergast, Duluth..... 1
Victor A. Neil, Mound..... 1
Max Pfaender, St. Anthony Park... 1
Geo. T. Halbert, Minneapolis..... 1
A. N. Bates, Excelsior..... 2
W. H. Hanscom, Minneapolis..... 1
S. H. Drum, Waseca..... 1
J. Flagstad, Sacred Heart..... 1
H. Haggard, Excelsior..... 1
LeRoy Ritchie, Annandale..... 1
A. H. Reed, Glencoe..... 1
Victor Carlson, Grayling..... 1
Henry Husser, Minneiska..... 1
E. A. Smith, Lake City..... 1
A. V. Wright, Mine Center, Ont.... 1
B. E. St. John, Fairmont..... 6
Wm. Jones, Osseo..... 1
A. Brackett, Farmers' Institute.....13
L. B. Arnold, Duluth..... 2
Otto Kankel, Fertile..... 1
R. A. Schultz, Farmers' Institute...83
John Bisbee, Madelia..... 2



Norway Forest near Douglas Lodge, Itasca State Park.

THE MINNESOTA HORTICULTURIST.

VOL. 35. FEBRUARY, 1907. No. 2.

ITASCA STATE PARK AS A DEMONSTRATION FOREST AND FOREST EXPERIMENT STATION.

SAMUEL B. GREEN, PROFESSOR OF FORESTRY, UNIVERSITY OF MINNESOTA.

The present condition of the forestry problem shows a very general desire on the part of thinking men to have this source of wealth on a practical, helpful basis. This desire, however, is largely undirected, and it is important to unite all friends of forestry for that which can best be undertaken at this time.

More has been done for agriculture by education of the young than in any other way, and undoubtedly we should approach the forestry subject from this standpoint. Previous to the establishment of agricultural education upon a practical, helpful basis little advancement was made from year to year, but since then the whole character of agriculture has changed, and it has become much more productive and satisfactory in every way.

We have an enormous area in Minnesota especially adapted for forests and another large area which will not be needed for agriculture for a long time. It is foolish to neglect this great source of wealth, as we are now doing. The cut-over lands of Minnesota are today almost unproductive.

There is a course in forestry in the state university, and the regents desire to bring it into closer touch with and make it more helpful to the great forestry interests of this country. Note the following resolution recently adopted by the board:

Resolution of Board of Regents asking for land for forestry demonstration.

At a meeting of the Board of Regents, October 4, 1906, the following resolutions were adopted:—

Resolved, by the Board of Regents of the University of Minnesota, that the course in forestry in the University of Minnesota

would be greatly improved and be made more helpful to the great forestry interests of our state were it provided with proper facilities for carrying on demonstration work in forestry, and,

Resolved, that we recommend to the legislature of the state of Minnesota that it provide suitable facilities of this kind from forest land held by the state and make reasonable provision for the maintenance thereof.

C. D. Decker,
Sec'y Board of Regents.

Just at present there is a great and special need of a demonstration forest in order to make the forestry work of the state university most practical and helpful. In the case of agriculture, students can go to the good farmers of the state for field instruction, but in the case of forestry there is scarcely such opportunity.

A demonstration forest, too, would be of much help to the owners of timber lands in showing them the possibilities of such property. Such a demonstration forest would in effect be a forest experiment station.

The idea is that the forestry students of the university should before graduating be required to serve at least seven months in practical work in forestry. It is a fortunate coincidence that the State of Minnesota has in Itasca Park a tract of land in every way adapted for this purpose and which would be improved by being used as a forest reserve as well as a park. Under present conditions there is little to encourage visitors in going to this place, but with forestry added to its park features it could be made a more popular resort.

A bill has been prepared by Attorney General Young to bring this about, and it will be introduced in the legislature shortly. This measure has the approval of Governor Johnson. By its provisions Itasca Park is placed under the State Forestry Board for general management, and provision is made for permitting the use of as much of it as may be needed for demonstration work in connection with the forestry courses in the University of Minnesota.

The story of Itasca Park, and a discussion of the way in which it might be used to special advantage in helping develop forestry in Minnesota, is well told in the following article by Mr. E. G. Cheyney, the assistant in forestry in the University of Minnesota.

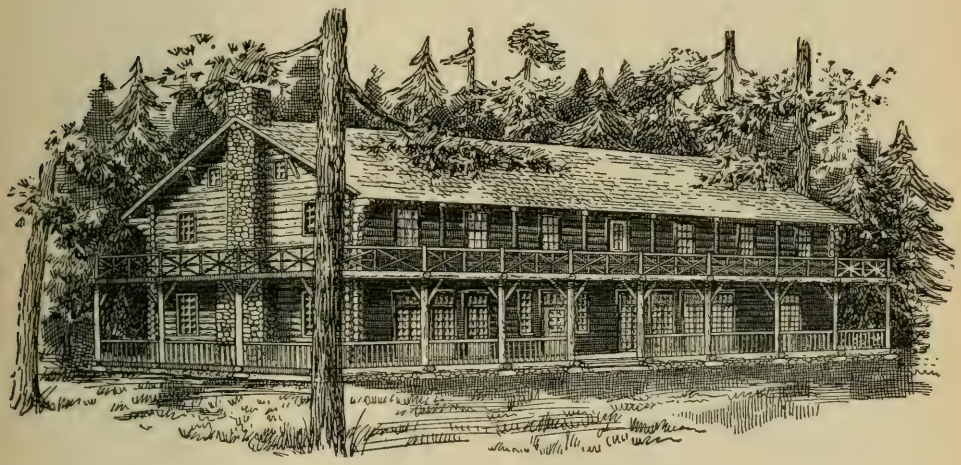
STORY OF ITASCA STATE PARK.

E. G. CHEYNEY, ASST. IN FORESTRY.

Under direction of Samuel B. Green, Professor of Forestry, Minnesota State University.

Description. Itasca Park was established by act of legislature in 1891. It consists of about 15,000 acres near and surrounding Lake Itasca, being partly in Hubbard county, partly in Becker county, but mostly in Clearwater county. The center of the park is about twenty-five miles north from Park Rapids and about the same distance a little west of south from Bemidji. The enclosed area is hilly and fairly well covered with a growth of pine and hardwoods.

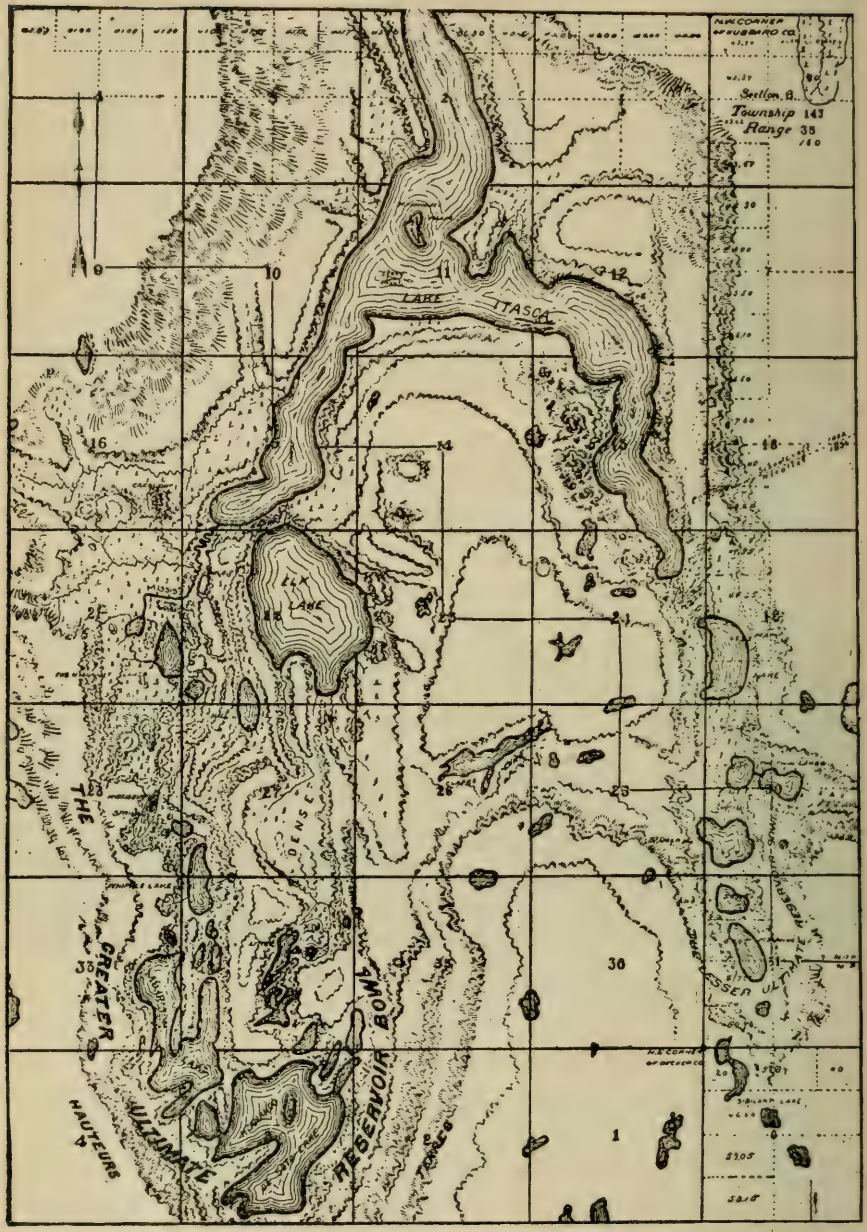
Purpose. The purpose of the park is to preserve the source of the Mississippi River inviolate from commercial desecration and keep it forever accessible to the general public. In addition it



DOUGLAS LODGE, ITASCA STATE PARK.

is to preserve to future generations a remnant of the great primeval forest which has played such a large part in the development of the state. It is right that our children and children's children should have these two features of historic interest handed down to them intact.

Standing Timber. Itasca Park is well suited to subserve both of these purposes. Within its boundaries stand 23,000,000 feet of



EARLIEST MAP OF ITASCA STATE PARK.

(Drawn by J. V. Brower, 1890.)

virgin pine, a good sample of the forests which once covered the Lake States region and played a star part in the development of the whole country.

Source of Mississippi. The lakes and springs forming the source of the Mississippi are all included in the park, and the first trace of a distinct stream which can really be called the Father of Waters flows from the north end of it. It is only sentiment that makes these features worth preserving, but it is a sentiment well worth the trouble.

Accessibility. Ample provision has been made by the legislature to foster this sentiment and make the points of interest accessible to the public.

New Lodge. In the center of the park, a magnificent two story log lodge has been built and well furnished as a headquarters for the superintendent and for the accommodation of visitors. A good road from Park Rapids to Bemidji passes by the door of the lodge, and a stage line from Park Rapids to the postoffice of Lake Itasca furnishes a daily mail service and daily means of entrance and egress.

Old Lodge. Three miles farther north on the same road, also on the shore of the lake and one mile from the north boundary of the reserve, is the old lodge, an eleven room house, now uninhabited, the first building put up for the superintendent and for the accommodation of guests.

Game Preserve. Hunting of every kind has been prohibited in the park ever since its establishment, and all kinds of game have prospered and multiplied under the protection. It is the one accessible place in the state where it is possible to see many grouse and quail, deer, beaver and an occasional moose in their natural habitat as they were found throughout the country in days gone by.

Danger from Fire. Such are the provisions that have been made for the preservation of the forests around the headwaters of the Mississippi. But are they really preservative measures? They make these points of interest accessible to the public, but they do not provide for the real preservation of them. The protection of the forest from fire, the arch enemy of the pine woods, which has destroyed thousands of acres of pine timber, has been left entirely to chance. One fire started through carelessness in the adjoining woods might, and is only too apt to, sweep all the forest away in a day and leave the now beautiful lake an unsightly puddle in the midst of a barren country. Several generations of careful

and expensive labor would then be necessary to restore the country to its present condition. The risk is too great and entirely unnecessary. The park could easily be made immune to this danger, and provisions should be made to that end. No one man can do it.

Transfer of Reserve. The most satisfactory solution would seem to be, as is now proposed, to place the park under the control of the State Forestry Board, which is best equipped for the handling of such a problem. A forester, trained in the care and protection of the forest, could then be placed in charge of the reserve and proper measures taken for its protection.

Fire Protection. A comprehensive system of fire-breaks should be made around the boundaries of the whole reserve to protect it from fires originating without, with secondary breaks in the interior to prevent fires originating in one portion of the reserve from invading the whole area. The part of the road in the reserve, now poorly laid out and in poor condition, should be relocated, put in thorough repair and incorporated in the system of fire-breaks.

Ideal Place for Forest School. The conditions on the reserve, even its shortcomings in the necessity for planting and fire protection, make it an ideal place for a Demonstration School of Forestry. In such studies more can be learned in a week from actual work and illustrations than from a month of lectures. The work in the demonstration forests at Yale and Michigan is there looked upon as the most important in the whole curriculum. The Minnesota Forest School, in one of the greatest timber states in the union, is without a foot of forest on which she can practice her preachings. The use of Itasca State Park for this purpose would make the Forest School for the University of Minnesota better equipped than any other forest school in the country. It would in effect form a forest experiment station.

An Assembly Hall. The old lodge, now uninhabited, could be fixed up at a small cost as a central messroom and assembly hall to accommodate a large number of students. Stables, sheds and other buildings are in fairly good repair. Around the main building is a good camping ground for any number of tents.

Seeding and Planting. The necessary planting up of the openings in the forest would require a large nursery. This (under the supervision of a trained man) would furnish ample opportunity—the best in the country—for the students to learn nursery practice and woods' planting. It would increase the value of the forest

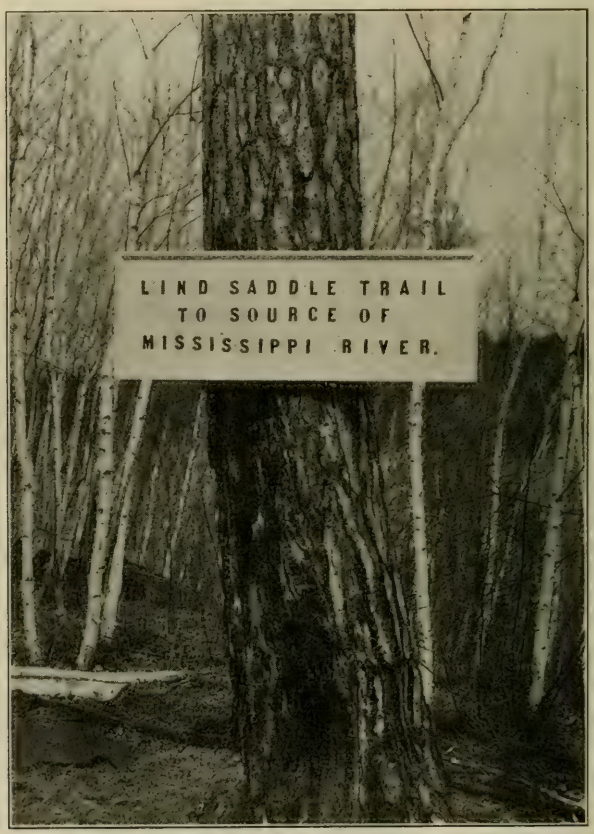
many times, and there would be a young forest to take the place of the old trees, large numbers of which are dying off yearly.

Management. The clearing out of the dead and down timber, the burning of the slashings and the establishment of the fire-breaks would furnish ideal illustrations and actual work in the care and protection of woodlands. The surveying and actual building of the roads and rides in the woods would give just such practice in practical field work as the forester needs. Surveys for working plans and planting plans, estimation of standing timber, studies of growth and of logging methods (logging in the near neighborhood of the park would furnish plenty of the last named), and all other problems of the woods could be studied out along with the daily work and accompanied by lectures to direct the work. There would be no time lost in working at random, as is now bound to be the case when the students go off by themselves to work in the woods for the summer.

View Looking west across Mary Lake.

Advantage to Reserve. Such would be the advantage which a forest school from the first of April to the first of October would reap from the reserve. In return the reserve would receive such care and attention as it could never get in any other way. The

nursery work, the planting, the construction of fire lanes, the removal of dead and down timber, the building of roads, all would be done by intelligent men with their whole interest in the work and always directly under the best supervision. All through the danger season there would be an adequate force of men trained in the art of fire-fighting at hand ready to answer the alarm at a moment's notice. There would be a continuous patrol of the whole reserve, making extensive damage from fire impossible. All labor done in this way would be of the cheapest in the end.



Sign Board on the Saddle Trail Built by Gov. Lind.

Nursery Work.. Millions of seedlings will be needed in the next few years for planting on this and other forest reserves in the state. A large nursery for forest trees would be desirable in connection with the forest demonstration and school features. Such a nursery might supply seedlings to forest planters at cost.

Today the farmer who wants to make a plantation of forest trees has trouble in obtaining a sufficient quantity of tree seedlings at reasonable rates and in getting species that will succeed in his section of the country. The nurserymen are not as yet prepared to supply this trade. The surplus of seedlings in the nursery not needed for the reserves could be sold to such buyers at cost, and no seedlings would be sold except those suited to the section in which they were to be planted. This would be an enormous advantage to tree planters all over the state and would do much to promote and improve the planting in prairie regions without in any way competing with the nurserymen of the state.

Old Lodge—Now Boarded up.

A Model Forest. The reserve would be conducted on the lines of a model forest managed according to scientific forestry methods. It would be a place where the lumbermen could see the results of such management. One trip through such a reserve would do more to convince the practical lumbermen of the feasibility of such methods than all the talking under the sun could ever accomplish. It would be a place where they could come to study improved methods and obtain accurate figures as to such matters. The effect in raising the lumbering standard throughout the state could not but be tremendous. It would call the attention of the public

to the practicability of forestry methods as nothing else has ever been able to do. "Seeing is believing" is the old saying, and it is becoming more and more the standard of modern education.

Experiment Work. Such an institution would necessarily include an experiment station in forest management and methods, experiment being another fundamental principle of modern education. In the reserve would be carried on experiments along all lines connected with forest work. Experiments in nursery work, thinnings and tree growth could be admirably conducted under the direction of the trained men connected with the forest school. Careful records of such work would furnish valuable data for the whole lake region, especially in Minnesota. There are something like 5,000,000 acres of land in this state that must, from its nature, be kept in forest. The economic handling of that forest land means millions of dollars to Minnesota. Nothing could do more toward bringing about the wise handling of this land than such a forest school, experiment station and model forest.

Rights of Visitors Preserved. These arrangements would not in any way interfere with the rights of the general public in the enjoyment of the beauties of nature included within the reserve. It would increase them. The original purpose of the park would be in no way impaired. The new lodge would still be conducted as a summer hotel for the accommodation of guests. The lake, the romantic source of the Father of Waters, would be more accessible than ever before; the primeval forest would be really opened up for their enjoyment for the first time. Moreover, there would be the added interest of a forest school, an experiment station and a model forest—all in full operation. The number of people enjoying the privileges for which the park was originally established would be greatly increased, and these would all get an insight into practical forestry.

An Improved Park. The transfer would change Itasca Park from an inert, neglected, uninstructive bunch of primeval trees, steadily dying out, to a live, carefully-tended, enlightening forest. It would contain an ideal Demonstration School of Forestry which would place the University of Minnesota at the head of the list in that line of work, and a Forest Experiment Station which would make rapidly for the development of better forestry methods. It would be the concrete illustration of practical forestry that the state so greatly needs.

SUMMARY.

The state property known as Itasca Park consists of:

14,000 acres of land, partly donated by the U. S. Government and partly purchased by the state.	
26,000,000 feet of standing pine, valued at	$230,000.00
Douglas Lodge and equipment, valued at	18,000.00
Old Park House, valued at	1,000.00
Total value exclusive of land	$249,000.00

Standing Appropriations.

For the purpose of acquiring new land within the park	5,000.00
For the salary of the superintendent	600.00

There is no fire protection; this is left to chance. A bad fire would destroy its value as a park.

It is now managed as follows:

The Governor is in charge and appoints the superintendent.

The Attorney General has charge of acquiring new land.

The State Auditor has charge of the school lands within the park.

It is proposed to place the park in charge of the State Forestry Board. Governor Johnson has recommended this in his message to the legislature.

The Board of Regents of the State University has asked the legislature to provide opportunity for demonstration work in forestry on some state land. It is proposed to do this in Itasca Park, which is well fitted for the purpose.

It is the belief of those well informed in forestry matters that instruction in forestry without field work is weak. Just at present our great forestry problems need, more than anything else, young men who are educated in forestry. Education can do for forestry what it has done for agriculture. If Itasca Park is used as recommended the distinctive park feature will not be disturbed. It would become a demonstration forest and a forest experiment station. Experiments would also be made in determining how quick-growing woods, such as cottonwood, willow and maple, can best be treated to make them more durable and valuable for construction purposes.

The bill referred to carries appropriations as follows:

For forestry instruction and experimentation under the State University	$5,000.00
For firebreaks, nurseries, etc., under the management of the State Forestry Board	3,000.00
Total	$8,000.00

The items for these appropriations are in detail as follows:

Firebreaks	$1,000.00
Repairs on old Park House	500.00
Furniture for old Park House	500.00
Repairs on road	500.00
Three teams and equipment	1,500.00
Tools	300.00
Clearing ten acres for nurseries and garden	300.00
Seeds and plants	300.00
Experiments in the impregnation of cottonwood and willow to increase their durability in the soil and their value for structural purposes	1,000.00
Improvement on the lake shore	200.00
Salary of forester and teacher	1,500.00
Tree planting and improvement cuttings	400.00
Total	$8,000.00

ANNUAL MEETING, 1906, NORTHEASTERN IOWA HORTICULTURAL SOCIETY.

A. W. MASSEE, ALBERT LEA, DELEGATE.

Your delegate to the Northeastern Iowa Horticultural Society arrived at Charles City about 4 p. m. November 20th, and went directly to place of meeting, but the afternoon session had already closed; so he went to the Hildreth Hotel, headquarters of the society, where he had the pleasure of meeting C. F. Gardner, vice-president, with whom your delegate was somewhat acquainted. He was introduced to C. H. True, secretary, also Reeves, Blakeman, Black, Poins and others.

He attended the evening session, viewing first the fine display of fruit, etc., that was on exhibition in the basement of the church. The display of corn, potatoes, flowers, etc., was not very extensive but very good what there was of it. The session was called to order by the president, C. G. Patten, who called to the chair Vice-President C. F. Gardner, when the president proceeded to read his annual address. He reviewed somewhat the early history of the society, its struggles, etc., and as the society was of age he was in hopes to see it make more rapid progress in the future.

An address of welcome was delivered by Prof. F. E. Hirsch, of Charles City College, responded to by B. F. Ferris, of Hampton.

Wednesday morning your delegate presented his credentials and was very cordially received and made an honorary member for the year. There was not a very large attendance, but as a heavy snowstorm was prevailing it undoubtedly had somewhat to do with the number present.

The Wednesday sessions were followed according to program with one or two exceptions. The Iowa members seemed to be well posted and presented their subjects in a very able manner, and many points of interest were brought out in the discussions that followed.

Mr. Gardner had a graft to illustrate his talk, "Observations on Grafting." It seems he takes a scion two feet long and produces a graft seventy inches tall in about eight months. I presume we will soon be hearing of Mr. Gardner taking a scion six feet long and producing a tree eighteen feet tall.

As Mr. Patten and Mr. Sherman had procured conveyances and wished the society to visit their nursery storage plants, of the

Thursday morning program only one subject was presented, "Spraying and Care of the Orchard," by Prof. S. A. Beach, Ames, Iowa. Prof. Beach had charts to illustrate his talk on spraying, representing blocks of trees, side by side, of the same varieties, showing the percentage gained by spraying in yield and quality—it also prevents dropping of fruit before maturity. I am not able to give the percentage, but he showed very conclusively that is what fruit growers will have to do if they wish to stay in the business for profit.

Thursday afternoon Rev. Nathaniel Pye gave a humorous as well as instructive talk on "The Minister in Horticulture." Also a paper full of wit and humor was read by Mrs. Pickett, entitled, "Then and Now, 1865—1905," contrasting past and present. Then came the reports of officers, committees, etc., also the election of officers, which resulted as follows: C. G. Patten, president; G. D. Black, vice-president; C. H. True, secretary; E. Blakeman, treasurer. Independence was selected as the next place of meeting.

ANNUAL MEETING, 1906, NORTHWESTERN IOWA HORTICULTURAL SOCIETY.

JOSEPH WOOD, WINDOM, DELEGATE.

The appointment as delegate to the Northwestern Iowa meeting reaching me on the afternoon of December 3rd, and I took a train that night for Sioux City, Iowa, where the meeting was to be held, arriving in good season the following morning. Upon inquiry, I found that the meeting did not convene until Wednesday, the day following, so that I had the day on my hands to look over the city, which I did, taking in also the stockyards and slaughter houses. In the residence portion of the city I was interested in seeing some fine catalpa and sycamore trees in good healthy condition. I did not think the sycamore would be hardy as far north as Sioux City.

On Wednesday morning I went to the City Hall and up to the third story, where I found the exhibitors unpacking a fine display of large, colored apples. In all there were six exhibitors, besides one from southwestern Iowa with a large collection of varieties grown commercially in that section, which display, however, was not a competitive one. There was a fine collection of flowers to brighten the rooms, made by two of the local florists.

The meeting began at ten o'clock with the reports of the officers of the society. The first subject taken up thereafter was a paper on the "Americana Plum, Its Past and Probable Future," by L. A. Clemons, of Storm Lake. He thought we had reached the limit in improving the Americana plum from seed, as he had grown many trees from choice seed and had not found the fruit from them superior to existing varieties. Being asked for my opinion on the subject, I stated my belief that the improvement of the plum from seed was just begun, and that we had many kinds superior to those mentioned by Mr. Clemons, that some of my own seedlings were very much better, naming the Terry, Free Silver, Williams, Emerald, etc., as being in this class.

Question: Is the Free Silver productive with you?

Answer: Some of the trees are and some not.

Question: Can you account for the unproductiveness?

Answer: The trees on high ground yield a fair crop every year, those on low ground bear only a few.

The Emerald would be one of the best except that it rots badly in wet weather. This can be prevented to some extent. I had some of these trees on the outside of the orchard, where there was free circulation, and few rotted. Those grown in the orchard most all rotted. As to the Eureka, it produces a fair crop every year, one of the earliest, large and a good quality and comes nearest to the European type of all we have.

Mr. H. L. Felter, of Washta, read a paper entitled, "Some Early Plums." He mentioned first a variety which he had secured of me of which he had forgotten the name, ripening about August 1st. Next was Forest Garden. The Milton he found worthless and not hardy, the Surprise was troubled with spurblight so badly that he only got a few plums—and so with all other kinds that belong to the Miner group.

Wednesday afternoon program was occupied by a variety of papers on the subject of apple growing. I noted specially one by A. T. Worth, of Mondamin, on the "Ideal Winter Apple in the Northwest." It appeared that the Northwestern Greening had the most friends, but it had one bad fault, getting bruised easily and not keeping well afterwards.

The evening program contained the annual address of the president, P. F. Kinne, and entertainment by some local talent.

Thursday morning session began with the re-election of all the old officers, followed by a paper on "The Kinds of Fruit That

Pay," by H. N. Antisdel, of Milford. Discussion brought out the fact that in northwestern Iowa the Wealthy was considered the most profitable apple, the Duchess standing next and then the Northwest Greening. Of plums the following list was endorsed, Forest Garden, Wolf, Freestone, Wyant, De Soto, Hawkeye.

Of the raspberries Red Iowa had the most friends, Loudon standing second and then Cumberland and Older. Blackberries: Snyder and then Stone's Hardy. Of strawberries, the Dunlap had all the votes, though a few mentioned Warfield and Splendid.

Mr. Donald Hill read a paper on evergreens. He favors, first, Austrian pine, Scotch pine second. White pine does well but must have protection while young. The bull pine did not have many friends. For windbreaks he recommended the Black Hills spruce first, white spruce next, and for ornament, blue spruce. T. J. Wilson, the principal strawberry grower of Sioux City, read a good paper on the culture of this fruit, his favorite being the Dunlap.

On Thursday afternoon a paper was presented by Wesley Greene, the secretary of the state society, on "Beautifying Home Grounds." A paper on forestry by H. P. Baker I did not hear, being called upon to act as one of the judges on the display of apples, which took up my time to the close of the meeting.

This was one of the pleasantest meetings I ever attended, and we were loth to say good-bye.

ANNUAL MEETING, 1906, IOWA STATE HORTICULTURAL SOCIETY.

O. W. MOORE, SPRING VALLEY, DELEGATE.

Tuesday morning, Dec. 11, found your delegate at the Iowa state capitol, in Des Moines, Iowa, where a session of the Iowa State Horticultural Society was being held in the society library room. We were given a most cordial reception and were made to feel very much at home by Mr. Gardner and Mr. Patten taking special pains to see that we were introduced to most of the Iowa members attending the meeting, and we found them a most fraternal and sociable lot of fellows.

The fruit exhibit was good. Where the same varieties were shown at both the Minnesota and Iowa meetings, those of the latter, as a rule, were larger and finer, except the Wealthy. There

is no doubt that Minnesota can beat the world in growing the Wealthy. The majority of the varieties shown were those that Minnesota cannot successfully grow, such as Jonathan, Grimes' Golden, Ben Davis, etc.

The Iowa society is waking up to the importance of growing apples from seed that may be better adapted to their state than some of those that they have now. They made inquiries of your delegate as to the workings of our new movement called the Plant Breeders' Association, which we organized last year. We explained the movement to them in detail, and the outcome of the matter was that they organized a Plant Breeders' Association. They now have a copy of our constitution and by-laws, which may be of some use to them. The bread that has been cast upon the waters for many years past by C. G. Patten and C. L. Watrous as to the utility of this seedling question is beginning to bear fruit.

There is also a movement in the Iowa society in favor of publishing a monthly magazine, something after the plan of the Minnesota society. Your delegate is of the opinion that this will be brought to the front this coming year.

"Experiments with Fruit in Cold Storage," by H. J. Eustace, Washington, D. C., was a talk of much merit. He advocated moving the fruit directly from the tree to the cold storage plant or cool cellar, and exploded the practice of the curing process in the shed or outbuilding. And the writer is satisfied that he is right, for he has proven the same thing in a practical manner. Prof. S. A. Beach, of Ames, Iowa, gave us a very good report on spraying the apple. One application of Bordeaux before the buds open, one just after the blossoms fall and two more of ten days apart—and one about the first of August for the second brood of the codling moth. It is evident that the up-to-date sprayer is fully as much if not more in evidence in Iowa than elsewhere in the northwest. One reason for this is that the fruit is largely grown in a commercial way, and spraying has become a necessity.

Plums did not figure in a very prominent way at the convention, but peaches received their share of attention, as they had a prolific crop of this fruit the past summer.

The pedigree strawberry came in for its prevalent whack of disfavor, and it got it good and hard.

The Iowa State Agricultural Society was also in session in one of the rooms of the capitol, and the display of their corn exhibit was

something superior to anything of the kind that your delegate had ever seen. The similarity running through the exhibit was marvelous, and if we had been called upon to judge the same we would have been hopelessly swamped.

Immediately after adjournment at the Wednesday evening session, we boarded street cars for the Savery Hotel, by invitation of Secretary Wesley Greene, to attend a banquet to be held in honor of the members of the Iowa State Horticultural Society. There were about two hundred guests present, and with a high-grade band to furnish music it was a very enjoyable and entertaining occasion.

To the best of our recollection we never received more kind, considerate and gentlemanly treatment than we received at the hands of the members of the State Horticultural Society of Iowa. Long may they wave!

ANNUAL MEETING, 1907, SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.

O. M. PETERSON, SEC'Y, ALBERT LEA.

The fourteenth annual meeting of the Southern Minnesota Horticultural Society was held, in the G. A. R. Hall, at Austin, Minn., on January 16, 17 and 18.

This meeting proved to be one of the most successful that our society has ever held. The attendance during the day sessions averaged from 50 to 100. The evening session was not as large as could be desired, which was perhaps owing to the many other entertainments in the city that evening.

The display of fruit was very fine, and a great number of people were surprised to see such a splendid exhibition of Minnesota grown apples so late in the season. Several hundred plates of fall and winter apples were shown, and all were in fine condition. Mr. Clarence Wedge alone exhibited about forty-five varieties. A large number of seedlings were also shown, of which the plate shown by Mr. L. W. Prosser, of Le Roy, took first premium for best sour winter seedling.

The following is the program, and all the papers were presented with but one exception:

WEDNESDAY AFTERNOON SESSION.

"Shelter Belts and Timber Lots," E. F. Peck, Austin.

"Selection of Seed," Robt. C. Wedge, Albert Lea.

"Planting and Care of Trees," S. D. Richardson, Winnebago City.

THURSDAY MORNING SESSION.

"My Berry Garden," Jens A. Jensen, Rose Creek.

"Fruits for the Home," J. O. Share, Albert Lea.

"My Experience with the King Raspberry and Other Varieties," M. E. Giles, Albert Lea.

"Spraying," J. M. Lindsay, Austin.

"Making and Planting Apple Grafts," D. M. Mitchell, Owatonna.

THURSDAY AFTERNOON SESSION.

"Planting and Care of Shade Trees," L. P. H. Highby, Albert Lea.

"Impressions on Forestry and Horticulture," C. Berthelsen, Albert Lea.

"Asparagus Culture," C. H. Farnsworth, Albert Lea.

"Planting and Care of Evergreens," C. M. Jensen, Albert Lea.

THURSDAY EVENING SESSION.

"New and Better Fruits," Clarence Wedge, Albert Lea.

"Improvement of School Grounds," Mrs. A W. Massee, Albert Lea.

"Illustrated Lecture," Prof. F. L. Washburn, St. Anthony Park.

FRIDAY MORNING SESSION.

"Farm Life Compared with Life in the City," Dr. A. H. Street, Albert Lea.

"Squash Culture," J. D. Smith, Austin.

"The Farmer's Orchard—Can It Be Made Profitable?" Thos. E. Cashman, Owatonna.

Each paper was followed by an interesting discussion, bringing out the experience of different parties.

The subject of forestry was handled at some length, and the general opinion seemed to prevail that it would be a paying investment for farmers to plant out trees of cottonwood, ash, willow and other quick growing sorts, on soil that is low or otherwise unsuited for agricultural purposes.

The planting of an apple orchard on sod ground was advocated by some members, but it seemed that the majority were in favor of clean cultivation during the first few years.

Mr. H. F. Hansen, of Albert Lea, who has an orchard of 1,000 Hibernal apple trees that he wants to top-graft next spring, asked the advice of parties present as to what varieties would be the most profitable for him to graft onto these trees. This question, it was agreed, was an important one, and it was hard to answer. Mr. Wedge and Mr. Hawkins, however, stated that they would advise him to top-graft those trees to Wealthy.

The subject of spraying received considerable attention. The illustrated lecture by Prof. F. L. Washburn, State Entomologist, on "Insect Pests and Their Parasites," was very much enjoyed by all.

Display of Apples at the Southern Minnesota Meeting.

The points brought out by the paper of Mrs. A. W. Massee were very timely and appropriate, showing the urgent need of some improvement and embellishment of school grounds.

The old officers of the society were all re-elected for another year.

Noted visitors from outside our territory who were present at our meeting and helped much to make it a success were C. F. Gardner, Osage, Ia.; S. D. Richardson, Winnebago; D. M. Mitchell, Owatonna; and Prof. F. L. Washburn, St. Anthony Park.

Since the papers read at our meeting will appear in the magazine, a review of them at this time is unnecessary.

IN MEMORIAM.

WM. OXFORD, FREEBURG, MINN.

William Oxford, one of the earliest settlers of Houston county, died in Caledonia, Saturday, Oct. 6th, 1906, at 5:30 P. M., from general debility, aged 83 years.

Wm. Oxford, Grandson and Great-Grandson.

Mr. Oxford was born in South Hampton, England, April, 1st, 1823. On April 9, 1849, he married Miss Mary Wakeford, and they came to America the same year, remaining at Boston, Mass.,

for some time. In 1851 they came to Allamakee county, Iowa, and the following year to Crooked Creek, in this county. His wife died about a year ago.

It is said that Mr. Oxford drove the first team to Brownsville, coming on the Indian trail in the spring of 1853. In 1858 he built a sawmill near what is now Freeburg, on his farm, now owned by his son-in-law, Joseph Till. Mr. Oxford devoted a great deal of his time to the raising of fine apples, having at one time one of the finest, if not the finest, orchard in the county.

For the last year he had been quite feeble, and for the last few months he was in the Caledonia hospital.

The writer's attention was first called to Mr. Oxford in connection with the exhibit of fruit that he contributed to the World's Fair at Chicago, in 1893, the collection that he sent being one of the finest that was shown with the Minnesota exhibit there. It was some years after that before we had the pleasure of a personal acquaintance. Mr. Oxford occasionally attended our meetings, and while a man of few words his influence was always to be counted upon for any good purpose in the work of the association. For many years and up to within a year of his death he was a regular exhibitor in the horticultural department at the state fair, and his fine orchard of five acres or thereabouts, containing upwards of one hundred and twenty-five varieties of apples, including some seedlings of value, enabled him to make fine exhibits. At least two of his seedlings are known somewhat to planters in Minnesota. The late J. S. Harris, in his book describing Minnesota apples, which is now in the society library, describes two. One is called "Oxford's Seedling" only, an early winter variety, and the other is "Oxford's Orange," also of the same season. Mr. Oxford was also very much interested in plums, having a large orchard of native varieties, one of his seedlings, the "Red June," being quite extensively planted. His experience in growing tender fruits, such as peaches and pears, had met with some success, though with no conclusive results.

Mr. Oxford's name appears on the roll of the society first in the year 1893. He was made an honorary life member in the year 1899 at the same time as was Mr. O. M. Lord, Mr S H. Kenney and a number of others of the veterans of the society, his loyal service during the limited period of his connection with the society having justly earned him this distinction. We are glad to have the opportunity to publish so fine a picture of Mr. Oxford as appears herewith, accompanied by the faces of two of his descendants, his happy expression therein indicating his kindly feeling towards them and, we believe, towards all the world, this being evidently his disposition.

In his death we have parted for a time from one of the most loyal members of our organization.—*Sec'y.*

HOW I AM PLANTING A SEEDLING ORCHARD.

JOHN BISBEE, MADELIA.

Having been planting apple seed for about forty years in Minnesota and meeting with indifferent success, the recital of how I propose to succeed may furnish other amateurs in the society some pointers which will enable them to do more in less time than I have done.

After many efforts to get good results in planting the seed, last season I hit upon a plan that gave the best results. In selecting the seed I adopted the following method: I have been top-working for several years and have the Hibernal top-worked with the Fameuse, Orange, Baldwin and other good keepers, and I have other combinations in which I have hardy stocks for the base and long keepers for the top. In this way there is a probability of originating something hardy enough to withstand our climate and at the same time secure the long keeper so much desired. I saved the seeds from the apples as I ate them through the fall and winter and put them away until about the middle of March. I then took the seeds and put them in soak for several days. I then took a small box and put in the bottom about one inch of moist dirt, and upon this placed a cloth and upon that the soaked apple seeds, upon this another cloth and upon that another layer of moist dirt. I then set the box out doors and let it freeze and thaw until the ground was in fit condition for planting the seeds. I planted the seeds as you would plant a bed of beets. The result was that about every seed grew, and in the fall I had about 650 nice seedlings from eight to sixteen inches in height.

I planted those seedlings in an orchard last spring, putting them eight feet each way, expecting that many of them would prove worthless. They all grew, and I find about one-half of them show promise enough to remain for further trial. I shall transplant some of them next spring so that the trees in my orchard will be sixteen feet apart. From fifty to one hundred of these trees are very promising, and I shall cut scions from them next spring and set them in bearing trees. The balance of the 300 I shall reserve until large enough to top-work. I shall then graft into them valuable orchard varieties, like Utter's, Malinda, Newell and others, reserving one limb of each tree to show up the value of the seedling.

In this way I will attain my original object and at the same time every tree will have a permanent value.

LEGISLATION FOR FRUIT BREEDING.

(FROM MINUTES OF ANNUAL MEETING.)

Mr. Wyman Elliot: Before I say anything about what the Executive Board is going to present here I want to say something in reference to what has been said about the variation in apples. I have cut a great many apples. I cut four barrels of Malinda last winter, and I cut them crosswise rather than lengthwise for a purpose, and I found there was great variation in the core. I observed that they showed the variations very plainly, and not only in the core but there was great variation in the seed. I was very particular when I run across one with that variation to save the seeds. I have them planted and am watching with a great deal of interest what the outcome will be. Luther Burbank states that whenever you see a variation in a plant you want to nail to it at once. I want to say further that I have been conducting seedling operations for seven or eight years. I have got to the point where I have got to quit. What are we going to do with this work? Throw it away, or is the State Experiment Station going to be put in shape so it can go ahead and take it in hand? It is just for this reason that we come to you with this bill which we propose to put before our legislature to give us an appropriation, so we can continue these experiments, and so the proper persons can enlarge this work. A draft of this bill is as follows:

A BILL PROVIDING A FRUIT BREEDING FARM FOR THE UNIVERSITY OF THE STATE OF MINNESOTA.

Be it enacted by the Legislature of the State of Minnesota as follows:

Section 1. There is hereby appropriated out of the money in the State Treasury not otherwise appropiated, the sum of Sixteen Thousand Dollars ($16,000), or so much thereof as may be necessary, for the purchase of a fruit breeding farm for the State University, by the Board of Regents of the Minnesota State University, as hereinafter provided.

Section 2. There is hereby annually appropriated out of any money in the State Treasury not otherwise appropriated, the sum of Two Thousand Dollars ($2,000), for the care and management of said fruit breeding farm.

Section 3. As soon as may be after the passage of this act, the Board of Regents of the State University shall select a fruit farm that shall meet with the approval of the Executive Board of the Minnesota State Horticultural Society as being well adapted for fruit breeding purposes.

Section 4. The Executive Board of the Minnesota State Horticultural Society is hereby required to appoint a committee of two suitable persons to visit said fruit breeding farm at least once a year to examine the fruit breeding work done there, and to report on the progress of such work to the Minnesota State Horticultural Society and to the Board of Regents of the Minnesota State University, together with such recommendations for the future conduct of such farm as may seem to them best.

This act shall take effect and be in force on and after its passage.

Mr. Benjamin: How many acres would be necessary?

The President: There is no number specified, but this could be left to the discretion of the men in charge. It has been suggested that eighty acres would be sufficient, but I told the committee that we ought to have a hundred and sixty acres.

Mr. A. K. Bush: The society wants to get back of a proposition of that kind, and the membership can be employed to good advantage in getting right after the men who represent their districts. It is said that this work can be done at the station, but the ground there is not adapted to the growing of apples. This farm should be located on soil where the conditions are better than they are at the station. Now, every member should send a letter to his representative or senator asking him to support that measure, and that sort of thing will help wonderfully, a great deal more than anything we can do here. Have it supported in that way and see when this bill is introduced that it is followed up by letters from members of this society, and I believe we can pass it.

The President: We are entitled to this appropriation anyway. The horticultural interests of the state are entitled to the passage of this bill to furnish them a farm. We had a farm at one time out at Excelsior, and the Board of Regents sold this farm, and I think obtained some $16,000 or more for it. If that farm had been saved to us so that at this time when the Horticultural Department of our State Agricultural School is in need of it, we would not have to ask the legislature to pass this bill, and it is simply asking them to give us back what they have taken from us. As a matter of fact, it belongs to us.

Soils for Orchards.—In a lecture, Prof. S. A. Beach, of Iowa, said the best land for an apple orchard is one which contains clay or has a clay subsoil, porous enough to let the water pass through. The premature falling of leaves in orchards during the wet season is often due to a lack of air in the soil.

THE PROPOSED FRUIT-BREEDING EXPERIMENT STATION.

A. W. LATHAM, SEC'Y.

The Minnesota State Horticultural Society will, at this session of the legislature, ask an appropriation for a farm to be used in breeding and testing fruit. Such a farm is greatly needed to place the state horticultural work in a satisfactory condition. The officers of this society point with pride to the development of fruit growing in Minnesota, in a commercial as well as in a small way about rural homes. The great interest taken in this subject, and the progress made, is shown by the magnificent displays of fruit made at the annual fairs of the State Agricultural Society and the meetings of the State Horticultural Society.

The State Horticultural Society has encouraged and is encouraging the raising of seedling fruits by its members and others, offering liberal prizes for desirable productions in this line. It has also distributed seedling plants at various times. As a result of all this work there are thousands of seedlings now of bearing age which need to be carefully tested under competent supervision. Besides this object in asking for a fruit farm, we think that the most progress in fruit growing in this state is to come from raising thousands of seedlings from our most valuable cultivated sorts, and we want a farm where this work can be carried on in a systematic and intelligent way and to a finish.

University Farm at St. Anthony Park would naturally be looked to as the place for such work, but not enough land there is available for this purpose, nor is it suitable. Furthermore, in the neighborhood of University Farm land is worth $500 or more per acre, and there is so much trespass that it is difficult to ripen fruit there. Suitable land for this purpose can be obtained at $100 or less per acre. Such a fruit farm should be located at some point easily accessible from University Farm and be under the general direction of the horticulturist of that experiment station. At University Farm there are now over 15,000 seedling apples and seedlings of other fruits for which there is no room, and many of these must be thrown away unless additional land is furnished the coming year.

The legislature of 1878 provided a fruit farm which was at one time in charge of the late Peter M. Gideon, who originated the Wealthy, Peter and other apples. This farm was sold a few years

ago, and the funds derived from it less the cost of the farm were turned into the current expense account of the State University. The statement of this transaction is as follows:

Cost of Minnetonka Fruit Farm	$1,309.10	
Derived from sale of Minnetonka Fruit Farm		16,469.43
Profit on Minnetonka Fruit Farm turned into current expense account of the State University	15,160.33	
	$16,469.43	$16,469.43

It will be seen from the foregoing that in asking an appropriation of $16,000, the State Horticultural Society is practically asking only for that which should be recognized as rightfully belonging to it.

PLANT BREEDERS' AUXILIARY, SECRETARY'S ANNUAL REPORT, 1906.

CLARENCE WEDGE, ALBERT LEA, SEC'Y.

On the 18th of last December, few members of the state society met in the office of the secretary in Minneapolis and organized the Plant Breeders' Auxiliary of the Minnesota State Horticultural Society, adopting a constitution and electing officers for the year. The object of the society as stated in the constitution is "to encourage the origination of horticultural plants adapted to Minnesota." Through our magazine the auxiliary was duly advertised, and a membership has been enrolled to the number of seventy up to the beginning of this meeting. The minutes of the first meeting having been fully reported in the Horticulturist, and no meeting of the auxiliary having been called up to the present time there are no proceedings to report.

About November 10, in pursuance of article six of the constitution of the auxiliary, a series of five questions was sent to each member, intending to draw out of each so far as possible a report of the work done during the year. To these questions we received thirty answers, which we have endeavored to condense as follows:

The first question was: What seeds have you sown during the past year with the hope of improving our present list of varieties?

The replies to this question showed that thirty, or every one replying, had sown apple seed, five crab seed, eight plum, two grape, two raspberry, two peony, one strawberry, one currant, one phlox

and one rose. Of those who had sown apple seed, the greater share mentioned the varieties sown, of which seventeen had sown Malinda—nine mentioning the fact of having received the seed from the society—eight had sown Wealthy, four Yahnke, three Hibernal, three Wolf River, two Duchess, two Peter, two Longfield, two N. W. Greening and two the seed of seedlings. It is unfortunate that all did not mention the variety of seed grown, as it is the object of the society to encourage exactness and care in sowing seed. Had it not been for the distribution of Malinda seed by the society, it seems likely that the Wealthy would have been the most popular seed. Of the other varieties of seed sown the Aitkin, Surprise, Wyant, Stoddard, Compass and Japanese are mentioned among the varieties of plums.

The second question was: Have you planted any trees or plants with the view of future cross-pollination?

Of the twelve replying to this question, three answered simply, yes, and nine we condense as follows: Patten's Greening to cross with Windsor Chief; seedlings of Malinda to cross with other varieties; Southern varieties of choice quality apple to cross with Northern sorts, and Malinda to cross with Wealthy. Two have Japan plum set to cross with native varieties, one plum to cross with sand cherry, and one Burbank to cross with Prunus Simoni. This indicates more work already done in this line than we had expected, and that trees set for natural crosses are already receiving considerable attention.

The third question was: Have you done any hand pollination, and with what varieties and results?

The answers to this question showed that but few have attempted anything of this kind. We condense some of the answers received as follows: One intends to do such work next season, one is anxious to learn, one has failed, one had crossed Red June with the Aitkin plum with no success as the season was unfavorable, one had crossed plum with wild cherry with no result, and one the annual single hollyhock with another species. One had used hand pollination in the absence of bees to grow squashes with good result, one had intended to do such work but the desired trees failed to bloom, one had done the work but states the varieties in such a way as to make it impossible to tell which were crossed. It seems from the above answers that at least four of our members have practiced hand pollination during the past year and that many others either intend to attempt such work or are greatly interested in

it, and, doubtless, need only the instruction and encouragement of our society in order to make such attempts successful.

The fourth question was: What immediate objects have you in view in the above work?

This question did not seem to be well understood. The idea was to bring out the particular objects that each was seeking in the line of work he was pursuing. Of the answers received, eight mentioned hardiness of varieties adapted to their particular locality, six mentioned long keeping apples and nine mentioned quality. The desire for quality and late keeping over mere hardiness, indicates the general advance that has been made in our Northern horticulture. Had such questions been sent out twenty-five years ago, there is no doubt that hardiness would have been shown to be the main object with at least nine-tenths of those engaged in originating new varieties.

The fifth question was: What interesting discoveries in new varieties have you made?

To this question ten answers were made, which we condense as follows: Ole J. Hagen, Hendrum, N. W. Minnesota, "Johnson's No. 6 apple." Otto Kankel, Fertile, N. W. Minnesota, " have hopes that my seedling strawberries will be an improvement " Seth Kenney, Morristown, So. Minnesota, "think the Gould crab imparts hardiness to winter apples worked on it." H. H. S. Rowell, Excelsior, Cent. Minnesota, "have developed a promising seedling potato." M. Olson, Montevideo, West. Minnesota, "have a seedling blackcap better than the Souhegan or Gregg, so far strictly ironclad." Jens A. Jensen, Rose Creek, So. Minnesota, "a seedling apple a mile from my place, fine red color, good size, early winter dessert." Erick Omland, McIntosh, No. Minnesota, "a native plum ripening with the Aitkin, similar but much better." Frank Yahnke, Winona, S. E. Minnesota, "crossing Hyslop crab with Tetofsky produces a better fruit tree than either." O. W. Moore, Spring Valley, S. E. Minnesota, "Japan plum top-worked, probably on native, has stood well two years and shows fruit buds." Henry Dunsmore, Olivia, W. Minnesota, "the Kaump apple is the only one with me that has been entirely free from blight."

While the need of better orchard varieties is the most pressing and should naturally receive the larger share of our attention, it is to be hoped that members will be found who will interest themselves in the lesser fruits and flowers, many of which offer great hope for improvement. It is also to be hoped that the day of

promiscuous seed planting is past. Those who take the trouble to sow seed should have sufficient interest to take hold of the matter in an exact and careful way, so that the results had may be something of a guide in future efforts.

The Malinda seed sent out by the society appears to have done remarkably well, only a few failures being reported and many mentioning gratifying success. While this work of seed distribution by the society should certainly be continued, we urge upon our members that they select their seed so far as possible from their own grounds, where they have a perfect knowledge of the varieties which may have entered into and made up the strain of seed sown.

It should not be forgotten also that our best plant breeders put great stress upon the proper nourishment of the parent plant while perfecting the seed, insisting that it inclines them to break from primitive forms and develop improved characteristics.

Our auxiliary society appears to have struck a popular chord among our members and begins the second year of its existence with the prospect of enlisting a large number of new members, and by instructing them so that the work of plant breeding for the benefit of our northern section may be carried on with a certainty of bringing forth improvement in our horticulture that will give it rank among the most beneficent agencies of the present date.

THE BARREL THE STANDARD PACKAGE.—At home and abroad, editorial representatives of this magazine have been told that dealers, except in a restricted way, do not want anything but the barrel. A barrel of regulation size is best, the flour barrel or its equivalent; (diameter of head 17⅛ inches, length of stave 28½ inches, outside measurement, not less than 64 inches circumference). The secretary of the International Apple Shippers' Association is authority for the statement that apples packed in a good flour barrel or second-hand regulation size barrel will bring as much money in any market in the world as in an absolutely new barrel.

EQUIPMENT FOR GATHERING APPLES.—No one ladder will answer all purposes in apple picking. At least two types will be found useful. The stepladder is indispensable. It should be strong, light, provided with a platform, and should have three legs instead of four. A stepladder with three legs is perfectly safe and will stand steady and solid on ground so rough and uneven as to make it impossible to use one with four legs at all. Longer ladders made strong and light, with broad rounds for the taller trees, should be of sufficient length to reach the tops. The side pieces should be united or jointed together at the top like the letter V inverted. The ladder can then be shoved up among the branches when necessary. It may also be used by laying it flat against a number of small branches on the outside of the head of the tree.

HORTICULTURAL NOTES.

J. R. CUMMINS, EDEN PRAIRIE.

We have had in the last fifty years favorable results sufficient to still further encourage us in the cultivation of trees and plants not native to the state. There are many varieties of trees and plants generally considered too tender for this climate that may be successfully grown in many locations with some cultivation.

Mr. and Mrs. Cummins and Friends before the Log Home of "Early Days."

Not always do we give any thought to the proper treatment of our trees. The root system of a tree to some extent is limited, and yet the elements necessary for life must be supplied or the tree dies, and the death is charged to winter weather. Thorough cultivation and fertilizing yearly will supply this food and will also be some remedy for drouth.

Before planting an orchard the ground should be well plowed, better in the fall before, and manured. Then plowed again in the spring and cultivated once a week till September 1st; and the same also for the shelter grove. For the last few years we have had very favorable weather conditions, plenty of moisture, and the cold for some reason not very injurious to trees generally, and yet the last winter—though the second mildest winter (20 degrees below the lowest temperature) since 1856-7—injured many trees, etc. The Lombardy poplar was badly hurt, Russian mulberry, the catalpa, the lilac in the bloom, the tamarix amurensis—and yet the blackberry uncovered came through in good shape. Many of the native cedars entirely killed; arbor vitae hedges growing for twenty years or more entirely killed.

"Horticultural Notes" might treat of very many matters connected with horticulture, but this paper will be limited to speaking of some useful and ornamental trees and shrubs and a few words on some native flowers which seemed doomed to extinction here but which can be preserved by cultivation.

Maple. The soft, or white, maple is well worth growing—with favorable weather. For the last three or four wet years it has been a very beautiful tree, but in dry seasons the leaves begin to turn in August. It should be always planted in damp locations. A maple planted in 1855 is now eight feet in circumference, some planted in 1861 about seven feet. The sugar maple should always be planted on clay land, but may be grown on other soils also, though the growth is much less than on clay. Two sugar maples set out in 1861 are now two feet seven inches and three feet in circumference. They have been growing in blue grass sod with no cultivation. Weir's cut-leaved, Norway and other maples are no doubt hardy in this climate. The Japanese maples may be hardy enough for this climate. The blood-leaved has been through two winters uninjured. They are not large trees and with some protection may endure this climate.

Chestnut (*Castanea Americana*). We have much evidence to show that the chestnut can be grown in the south part of the state. The tree has stood forty below zero without injury, and for the last two winters has come out in as healthy condition as any tree on the place. Chestnuts grown near Winona are shown at this meeting. The natural northern limits of the tree are north of Concord, New Hampshire, to Winnepesaukee Lake, Vermont; and in New York, in parts of Ohio, but not generally in Indiana and Illinois.

Horse Chestnuts. The variety from Kansas is particularly hardy and so far as known has never injured in fifteen or twenty years. This variety does not grow very large, but it is in every way well worth planting. The nuts should be kept moist, and left out and covered with leaves; they start to grow early in the spring and should be planted as soon as the frost is out sufficiently. The best way to grow nut trees is to have the ground plowed in the fall and the nuts planted about an inch deep, so that they can have all the favorable conditions that result from fall planting; planted in the spring the soil removed dries out, and the conditions are not so favorable as in the fall planting.

The Ohio Buckeye is a much larger tree than the Kansas variety, and it has been growing here without injury for some years.

The Green Ash should be more planted than it is; being a native it is perfectly hardy. The *white ash* is somewhat tender, but from northern sections might be hardy.

Basswood, or Linden. This tree is always well worth planting. If anything, it is even more hardy than the elm and not so liable to have the limbs broken by wind; also it is not such a nuisance as the elm from growing so many trees from the seed.

Elm. Where no other tree can be grown it is well to plant the elm, but it is not desirable on cultivated land, on account of the extra work needed to keep down the trees produced by the many seeds spread by the winds. An elm planted in 1855 is now nine feet in circumference, with a spread of limbs fifty to sixty feet.

Rock Elm is of very slow growth.

Cottonwood planted in 1861 are now over eight and nine feet in circumference, probably eighty feet or more high. The elm and cottonwood seem to have vitality enough not to be injured by lightning. The large elm was struck in 1875, the bark for ten feet from the ground and nearly a foot wide, was stripped off, but it is now entirely healed over.

The Beech has now been through four winters and not injured, and it might be recommended for moist locations to the careful grower.

Birch. The European cut-leaved birch is one of the most beautiful trees grown in the state. There is much complaint of it being a short-lived tree, but in a fairly good soil with cultivation and fertilizing the tree can be depended on for many years. In many of the cities the top soil is often moved off in the grading.

leaving a subsoil which is clear sand or gravel. No farmer or gardener expects to grow a crop in sand or gravel, unless he uses large quantities of manure.

Red birch and *white* are very desirable trees, hardy and satisfactory.

Hickory. Too much cannot be said for the shellbark hickory. It being a native of the southeast corner of the state is evident proof that it will succeed in the south and east sections of the state, at least as far north as Wright and as far west as Blue Earth counties. The tree is of very slow growth for the first four or five years; when older with cultivation and fertilizing the growth is two or three feet. This growth is always made in the first part of the season, and by the middle of July all growth ceases. The same conditions govern the buckeye. From seed that was grown in Indiana and planted in 1870, trees that are now twenty feet have been raised. This year one of the trees bore the first nuts, probably the first grown in Hennepin county. The pecan hickory is not hardy, kills back but sprouts every spring.

Present Home of J. R. Cummins.

Walnut. There is no need to say much of our native walnuts. The black walnut is now growing and bearing nearly one hundred miles north of its natural limit. There is no doubt it would be a very profitable tree to plant by the acre, on suitable soil or land that would be cultivated and well manured, using also plenty of ashes. A tree from seed planted in 1870 is now nearly six feet in circumference.

The Japanese Walnuts Sieboldii, Cordiformis, Rupestris and Manchurian, are probably hardy. The Sieboldii has grown north

of Minnetonka and also near Farmington, Dakota county. The Rupestris was not injured last winter; the Manchurian lost a few terminal buds; but they have all made a fine growth this summer, and have every appearance of being as hardy as the native walnuts.

Ginkgo (*Salisburia Adiantifolium*). Mr. Grimes, who was one of our oldest members, about fifteen years ago planted a ginkgo tree on the south side of a house near 32nd Street and Nicollet Avenue, Minneapolis. This tree evidently was never injured; a year ago 1905, in the fall, the tree was taken up and moved. This fall the tree was in fair condition.

Oak. Many varieties of oak are perfectly hardy and should have the consideration of the tree grower. White, scarlet, burr, rock, chestnut, red, and others can be recommended.

Magnolia. With some protection the magnolia may be grown here.

Shrubs. The Calycanthus, though sometimes killed back, seems to be more hardy than the Tamarix. Hercules Club may be hardy. Cornus Florida has not been injured in the last four winters.

There is some need for those who have a regard for flowers to look after the protection of some varieties that are rapidly being destroyed. Of these are the Cypripedium, or Mocassin flower; Noah's Ark, the small flowered, and particularly the large red. All these are easily grown with the proper soil and some cultivation.

Mr. J. F. Benjamin: I would like to ask Mr. Cummins if the white oak can be successfully planted when three or four feet high.

Mr. Cummins: You could do it, but I would rather have them where they grow or when they are two years old. The walnut and the shellbark hickory can be moved, but it is an awful job.

Mr. Benjamin: The red oak is easily transplanted.

The President: How large?

Mr. Benjamin: I have transplanted them five or six feet high.

Mr. S. D. Richardson: Oaks are readily transplanted at one year, and after that you can move them when you please.

Mr. Geo. A. Kellogg, (Wis.): I want to make a remark in regard to planting hickory nuts. I planted some selected large nuts on two sides of a forty, planted them in the fall after they were gathered, covered them lightly and never found but one that grew.

Mr. Cummins: They got too dry. If it gets dry, any kind of nut will fail.

Mr. Kellogg: They were planted in the fall when green.

Mr. Strand: How long have you had those Japanese varieties?

Mr. Cummins: I have had the Sieboldii five or six years, the Manchurian has been put out two winters, and the Rupestris too—that was the hardiest of the whole lot.

Mr. Strand: How long have you had the Calycanthus?

Mr. Cummins: O, I have had those for years.

Mr. Benjamin: I have tried planting by digging down the year before I wanted to plant such trees as the oak and black walnut and cutting off the tap root as deep down as possible letting them grow a year, and then they can be easily transplanted. I am going to take up a lot of trees that way this fall.

Mr. Kellogg: You don't need to cut that tap root deeper than a foot.

Mr. E. G. E. Reel: How about those mocassin plants? Can they be transplanted?

Mr. Cummins: Yes, you can move them all right, but you want to take a little soil with them. I think they also want protection in winter.

Mr. Reel: Will the purple variety grow in ordinary garden soil?

Mr. Cummins: Yes, they will grow in common soil.

Mr. Husser: We transplanted quite a few of the moccasin flowers, but they never bloomed after the first year, and I believe from our own experience it is something that does not pay.

Mr. Cummins: You ought to give them some water. The small ones will bloom every year.

About the cut leaf birch. It will live a great deal longer if a man makes a hole and puts in stones when planted. It is something that wants a whole lot of moisture, and the stones help to supply moisture in a dry season. Stone will help to draw moisture out of the ground.

Mr. G. A. Anderson: Do you regard the horse chestnut as hardy in protected localities in good soil?

Mr. Cummins: It will grow anywhere. I know one at Shakopee that must have been there for twenty years, and mine have been planted for twelve years and have never been hurt. The Ohio buckeye is not so hardy. Mr. Sherman claims there is not much difference, but there is. The Ohio buckeye leaves are larger and thicker, but the Kansas variety is not so large.

Mr. Benjamin: What variety of nut trees would you advocate for roadside planting?

Mr. Cummins: I don't know that I would advocate any, because you have to cultivate them. I don't think I would recommend any for that place.

THE WINDBREAK ON THE PLAINS.

N. O. P. SYNOGROUND, GROTON. S. D.

The first thing a farmer should do when he starts a place on the plains is to carry in his mind the spot where he will build his house and barn and then commence breaking up his ground. When this is all done he can plant trees for shelter, so that he will not be compelled to have the fierce north wind strike him in the face when he steps outside his door.

A Sheltered Nook on the Prairie Facing South under Shelter of Windbreak.

The windbreak on the plains should be at least eight to ten rods away from the buildings. The best kinds of trees for this purpose are cottonwood, box elders and ash, mixed together. The cottonwood is the quickest grower of them all, and the ash is the slowest, but the ash will outlive either the cottonwood or the box elder.

This windbreak should be eight rods wide and twenty rods, or even thirty, long. The way is should be planted is six feet apart in the row each way.

The farmer will lose nothing by planting trees in this way, as he may utilize the land for any kind of crop which he may desire. Cultivated and kept clean, in three or four years he will have trees ten feet high and an ample windbreak for any farm. Now, if he wants a nice garden between his house and the windbreak and a border for the same, plant a couple of rows of Russian olive

Mr. Synoground's Vegetable and Fruit Garden behind the Windbreak.

and a row of the Russian pea tree. If he wants it to look real nice, put a row of honeysuckles inside of this, and he will have the finest thing that he could wish for on a farm. The farmer should not neglect this for he has no true farm home unless he has a few flowers surrounding his home.

The Russian olive tree has a beautiful yellow flower that blossoms in June and stays in full bloom for three or four weeks, while the honeysuckle is the first shrub of them all to blossom in the spring. Each of these can be obtained at a very reasonable price of any of the nurserymen of South Dakota or Minnesota.

Secretary's Corner.

Membership Roll for 1907.—At the date of writing, Jan. 28th, the annual membership roll for 1907 stands at 1036, adding to which the life roll of approximately 150 members brings the total membership to date up to 1186. Don't you want to give this roll a lift?

Have You Sent in a New Member?—The membership roll is steadily growing as usual at this time of the year, but if we are to reach the maximum aspired to for 1907 it can only be done with the assistance of the membership. Don't fail to send in at least one new member! There should be some one in your neighborhood who ought to be a member of the society, and you would do him a service by bringing him in.

A Demonstration Forestry School.—A bill has been introduced into each house of the state legislature providing for the establishment of such a school in Itasca Park. Please note an article on this subject occupying the first ten pages of this number. It is an important step in the direction of the development of practical forestry in Minnesota and should receive the approval of every public minded citizen.

Health of Mr. Frank Yahnke.—This honored and most useful member of our society has been in poor health since early last fall, his condition requiring later two visits to the hospital, from which he has now lately returned again to his home in Winona, and it is understood that he is slowly improving. His host of friends are looking forward to his speedy recovery and join in hope that there may be yet many years of useful service in store for him.

Our Delegate to the Wisconsin Meeting.—Mr. John A. Howard, of Hammond, Minn., vice Mr. S. H. Kenney, who was unable to go, is to represent our society at the coming annual meeting of the Wisconsin Society, which is to be held in Madison, Feb. 5th, 6th and 7th. Other members of our society, we understand, will also be present, Prof. Samuel B. Green by invitation as a participant on the program, also Mr. Roy D. Underwood, of Lake City, as a visitor. With such a strong representation Minnesota ought to make a good showing at that meeting.

Annual Meeting, South Dakota Horticultural Society.—The regular annual gathering of the South Dakota Horticultural Society was held at Groton, S. D. on Jan. 22-23-24. The program of the meeting received shows the usual variety of topics, commencing Tuesday morning and closing Thursday afternoon. Prof. N. E. Hanson, the secretary of the society, was present to tell "what I have seen this summer," which refers to his tour of Siberia and northern Europe in search of hardy plants. Mr. L. R. Moyer, of Montevideo, attended this meeting as the representative of the Minnesota Society.

About the 1906 Magazines.—Since the report for 1906 has been sent you, so that you have bound into it all the 1906 magazines, what have you done with the "Minnesota Horticulturists" received last year? It is one of the conditions of accepting the volume that the member should give away these

magazines where they would be appreciated, and incidently they can be used to good advantage in securing new members. Don't throw away these valuable periodicals; others who are not acquainted with them would be hungry for them. Pass them along and do good while you may, both to the recipient and the society.

Select Seedling Apple Trees for Plant Premium.—Apple seedlings, No. 9 in the list of plant premiums this year, have been grown from the same seed of the Malinda apple which was sent out last year to plant for the purpose of growing seedlings for the prize contest. Members selecting these seedlings for plant premiums can enter them in this apple seedling contest. Many times heretofore this contest has been referred to, and another description of it is to be found in the supplement accompanying this number. If you can not grow apple trees from the seed successfully, secure some of these seedlings and plant them instead; it will answer every purpose.

The American Breeders' Association.—This national organization held its annual meeting at Columbus, Ohio, Jan. 15 to 18, in connection with that of the Ohio State Horticultural Society and other kindred Ohio associations. The only name from this part of the country that we note is that of Prof. N. E. Hansen, who delivers an address entitled, "A Plant Breeder's Trip to Eurasia." A number of plant breeding topics appear scattered through the different sessions, and as the question of plant breeding is a live one just now in Minnesota there should be many of our members who would be interested in studying these subjects as presented at this meeting. A remittance of $1 to the secretary, Hon. W. M. Hays, Washington, D. C., will bring the published report containing them.

Death of A. W. Sias.—The death of this honored life member of an early date occurred unexpectedly, to us at least, at the home of his son in Pomona, Missouri, on Dec. 24th, 1906, of pneumonia, passing away at the age of seventy-five years. Mr. Sias was one of the charter members of the State Horticultural Society. The surviving members of the first roll of the society are now only Mr. Wyman Elliot and, perhaps, Mr. C. L. Smith, of Spokane, Wash., though as to the latter name there is some uncertainty. Mr. Sias having a nursery at Rochester at an early date was a larger factor in laying the foundations of successful horticulture in Minnesota. He removed from the state in 1890, since that date residing most of the time in Florida. A more extended biographical notice will appear later.

Apple Seed for Distribution.—A quantity of Wealthy apple seed has been secured from fruit grown in the orchard of Mr. J. A. Howard, of Hammond, Minnesota, and it can be had from Secretary Latham upon application at ten cents per packet of twenty-five seeds. This seed is suitable for growing seedlings to be used in the apple seedling contest offered by this society, the first prize of which is to be $100, in 1912, and so on for seven successive years at $100 per year, to be awarded for the best seedling apple shown at each annual exhibit. Your attention is called to the supplement contained in this number, which gives a full description of this contest on one page, and on the other is a form of application which can be used in making an entry for this contest. We hope every member of the society will make at least one entry each year for a number of years, and as many more as may be.

The Proposed Orchard Experiment Station.—The membership of the society generally know of the effort being made to secure a suitable tract of land to be used with the State Experiment Station for the purpose of testing and originating new varieties of apples and other fruits. It is an imperative need in the further development of the pomology of this region. A bill similar to the proposed bill to be found on page 63 of this issue has been presented in each house of the Minnesota Legislature and is now under consideration, and members of the society are urged to take early opportunity to speak or write to the members of the legislature from their districts, requesting their assistance in the passage of this important measure. Two or three articles in this number, which will be found by looking it through, bear upon this subject and will give you all the information needed to make an intelligent appeal. Please do not neglect this but give it early attention and help forward the work.

Annual Meeting, Minnesota State Agricultural Society.—The regular annual gathering of this society, whose principal work is the operation of the Minnesota State Fair, was held in Minneapolis, Jan. 8th to 10th. Mr. F. H. Nutter, of Minneapolis, and Mr. R. A. Wright, of Excelsior, with the president of our society ex-officio, were present as representatives of the horticultural society. An interesting and helpful program occupied the better part of three days, the subject of horticulture, however, being conspicuous by its absence. Much interest was manifested in the subject of the establishment of local agricultural schools, which crystalized into the form of a series of resolutions directed to the state legislature, urging a practical movement in that direction. The annual election resulted in the re-election of all the old officers, and since then Secretary Randall has been re-elected by the board, so that there will be no change in the management of the state fair for the coming year.

Prof. N. E. Hansen at Home Again.—A telegram from Prof. Hansen received on the opening morning of our annual meeting, sent from San Francisco, indicated the time of his return from the trip he has made the past summer in Siberia and Northern Europe in the interest of "novelties in fruits, shrubs, flowers, etc., as well as cereals, grasses and forage plants." As to his journey he says in a personal letter, "It was a rough, adventuresome trip, but I got through safely, and I feel much pleased because I was enabled to complete the work I started nine years ago, namely to trace the northern distribution of alfalfa throughout the continent of Asia. I picked up the trail where I left it in Siberian deserts nine years ago and carried it clear across Asia and found even more than I hoped for. It was an exciting hunt, and I think it was worth while." We may expect something more definite than this from the professor for publication in our journal before long. As to his work in plant breeding at Brookings he says " I think I will let some of my new hybrids and some of my new seedlings go out for trial this spring."

Honor Roll for January.—The following are the names of those who have secured new members for the society during the month of January up to the 28th. inst.:—S. H. Kenney, Waterville, 1; F. C. Winkley, Mpls., 1; E. Bonde, Cottonwood, 2; A. H. Reed, Glencoe, 2; McLeod Co. Hort. Society, 3; V. A. Neil, Mpls., 3; E. J. Dickman, St. Paul, 3; John Torgerson, Milan, 1; Chas. Haralson, Brookings, S. D., 4; S. O. Miller, Lakeville, 1; M. Olson, Montevideo, 2; D. W. C. Ruff, St. Paul, 3; F. J. Cowles, West Concord, 2; Jewell Nursery Co., Lake City, 1; John E. Stryker, St. Paul, 3; E. J. Lovold, Mpls., 1; O. C. Christoferson, Mpls., 1; Wm. Sandrock, Rushford, 1; A. Brackett, Farmers' Institute, 49; R. A. Schutz, Farmers' Institute, 67; J. P. Andrews, Faribault, 3; H. H. McLean, Rockford, 2; Chas. A. Lund, Vining, 1; Geo. W. Strand, Taylors Falls, 1; A. P. Jenson, Mpls., 1; A. B. Lyman, Excelsior, 1; So. Minn. Hort. Society, 33; M. O. Besserud, Maple Plain, 1; Minn. State Beekeepers' Society, 30; L. B. Arnold, Duluth, 1; John Bisbee, Madelia, 2.

Orchard Trees from a Minnesota Nursery, Five Years Planted. On Place of J. A. McVeety, Howard Lake.

THE MINNESOTA HORTICULTURIST.

VOL. 35. MARCH, 1907. No. 3.

CENTRAL TRIAL STATION, ANNUAL REPORT, 1906.

(State Experiment Station.)

PROF. SAM'L B. GREEN, SUPT., ST. ANTHONY PARK.

In the year just closed the work at University Farm has been unusually successful, and a great improvement will be noted in our buildings and in campus changes. The attendance at the school has been larger the past year than ever.

In the Horticultural Division, one bulletin of 114 pages has been published, devoted to a discussion of the ornamental plants tried at the Experiment Station. The work in variety testing has been continued much as usual, but owing to changes in the campus it will be necessary for us to remove our work with small fruits from the land used for this purpose for a long time to a new purchase adjoining the old farm on the west.

Special emphasis has been paid to plant breeding during the past year, and we feel that this subject should receive greater attention in the future. The plant breeding work with apples has been continued, and we have some 6,000 apple seedlings. These were raised from seed taken from Malinda apples that grew top-worked on Duchess and Wealthy trees, and which were in flower at the same time and were undoubtedly crossed together. These apples were bought from Mr. Seth Kenney by the Horticultural Society and turned over to the Experiment Station. In all there were seventeen barrels of Malinda apples that were used for this purpose. The seedlings came up very thriftily, but there was considerable loss from damping off during the cold weather of spring. In saving this seed it was noted that a portion of it was quite distinctly rounding in form, resembling the Duchess, while the rest was of the ordinary Malinda type. This round seed was saved separate from the rest, and from it we have 110 seedlings. It is proposed to send out a few thousand of these seedlings to the membership of the State Horticultural Society for plant breeding

purposes. The balance of them will be grown in our trial orchard.

About sixteen years ago we received from Arnold Arboretum a good collection of Pyrus (apples) and Prunus (plums). Among them we had Pyrus baccata of two kinds, and both of these seem well adapted for stocks. We have saved a considerable amount of seed from them for this purpose. Last year we had more seed than ever before, and from it raised about 1,200 seedlings, which will be used to give a thorough test of this species of the apple—which is promising as a hardy stock. A form of the crab apple received under the name of Pyrus malifolia we have tried extensively as a stock.

Figure A.—Orchard of Hibernal Apple Trees Planted for Top-working at Minnesota State Experiment Station.

Figure A shows a portion of the new trial orchard planted last spring on a piece of land recently turned over to the Horticultural Division. This consists of 400 Hibernal, planted four feet apart each way—for top-working.

The method of protecting the stems of these trees is novel and perhaps should receive a word of explanation here. The stems are enclosed in galvanized wire netting, one-half inch mesh. These were not put on until the approach of cold weather. They are made large enough to enclose a tree six inches in diameter. As they did not fit snugly on the ground, and as we wished to mulch the trees, a shovelful of ashes was put inside of each wire protector—after which the trees were mulched with stable manure and a few cornstalks stuck inside each protector to prevent sun-scald. The

netting is for protection against mice, which otherwise might be troublesome when the trees are mulched.

In the same orchard and between the trees, about 5,000 plum seedlings have been planted. In addition to this about 4,000 plum seedlings were grown from seed saved in 1905. These were all from selected varieties.

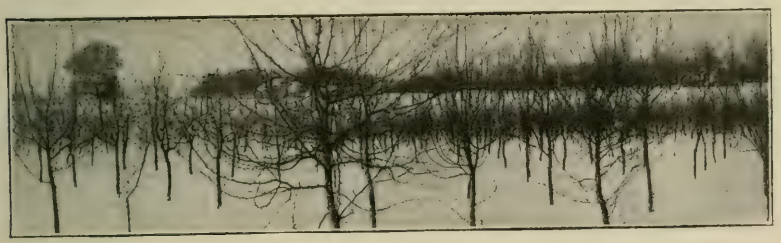
In connection with this subject of plums, mention should be made of the work done at Mr. Nils Anderson's place, near Lake City. We found here that he had a good collection of native plums and several varieties of Japanese plums that were growing near together, and which were undoubtedly crossed in the bloom, as they were in flower at the same time. A considerable amount of hand-crossing was here done, and in addition to the seed from these all the plum pits grown on Mr. Anderson's place were saved for our use. They are now stratified and will be planted the coming spring. In all about twelve bushels of plums were obtained from this place, and they consisted of the following varieties:

Abundance, Burbank, De Soto, Wolf, Weaver, Swedish Damson, Shipper's Pride, Grencon Plum.

The following crosses were made by hand:

Abundance x De Soto.	Burbank x Wolf.
Abundance x Wolf.	Shippers' Pride x De Soto.
Burbank x De Soto.	Shippers' Pride x Wolf.

The buds were opened and emasculated one day and pollinated the next. In most cases the flowers after being emasculated were bagged with cloth or paper bags until the fruit had set. Then they were removed, but the tags were left on the branch for identification



Seedling Orchard at Minnesota State Experiment Station.

On one tree of Abundance most of the flowers were pollinated with Wolf and De Soto pollen, but not bagged nor marked.

When the plums were ripe they were gathered, marked and shipped to the Experiment Station. Here the pits were removed and stratified.

Strawberries.—The crossing work was all carried on at the Experiment Station. The following crosses were made:

Alaska x Dunlap.
Dunlap x Seedling No. 8
Dunlap x Alaska.
Dunlap x Sheppard.
Dunlap x Pocomoke.
Dunlap x Native Wild.
Native Wild x Dunlap.

The Alaskan variety produced only a scant supply of flowers, but the flowers had a good amount of pollen.

The best time to gather pollen was found to be at 9 a. m.

The Sheppard is usually an imperfect variety, but some of the flowers were perfect. Among the wild strawberries there are also found perfect and imperfect varieties.

The method of emasculation and pollination used was as usual. Paper and cheese cloth bags were used. The paper bags in a few instances induced rotting of the fruit.

Out of 229 flowers of Dunlap crossed with Alaska, only 112 set fruit, or about 48 per cent.

Of eighty-seven flowers of Dunlap crossed with native wild, fifty-three set fruit, i. e., 61 per cent.

Of fifty-nine flowers of Dunlap crossed with Pocomoke, thirty set fruit, i. e., about 50 per cent.

Dunlap crossed with Seedling No. 8, four flowers; three set fruit.

Wild crossed with Dunlap, ten flowers; six set fruit.

From about 100 flowers of Alaska crossed with Dunlap, only two berries were produced, or 2 per cent. One of these was stolen, but the other was saved and from it we raised thirty good seedlings.

Blackberries and Dewberries.—Of these the following crosses were made:

Ancient Briton x Hoyt's Dewberry.
Fluke's Hybrids x Hoyt's Dewberry.
Ancient Briton x Native Wild Dewberry.
Hoyt's Dewberry x Ancient Briton.
Hoyt's Dewberry x Fluke's Hybrids.

Of all the flowers crossed, only from 15 per cent to 20 per cent set fruit, and they ripened much later than the general crop, even though the crossed flowers were the first ones to appear.

Raspberries.—Of these the following crosses were made:

Loudon x Wild Red Native.
Loudon x King.
Loudon x Columbian.
King x Columbian.
King x Loudon.
Wild Black Cap x Columbian.
Columbian x King.
Columbian x Cumberland.
Columbian x Ancient Briton
Columbian x Loudon.
Wild Red x Columbian.
Columbian x Wild Red.
Cumberland x Columbian.
Cumberland x Loudon.
Wild Red x Loudon.

Results were as follows:

King x Columbian, 29 flowers crossed, 21 set.

King x Loudon, 38 flowers crossed, 28 set.

King x Columbian, 22 flowers crossed, 20 set.

Loudon x King, 9 flowers crossed, 5 set.

Other varieties and crosses showed similar results. Eighty-two per cent of the flowers crossed set fruit.

Strawberry-Raspberry.—The following crosses were made with the strawberry-raspberry (Rubus sorbifolius):

Strawberry-raspberry x King raspberry.

Strawberry-raspberry x Ancient Briton blackberry.

Strawberry-raspberry x Fluke's Hybrid blackberry.

These crosses set about 40 per cent.

Roses.—Crosses were made between the white and red rugosa roses and some of our hardy hybrid perpetuals. Of about seventy-five flowers of the white rosa rugosa crossed with hybrid perpetuals not a single one set fruit. In fact, no perfect hips were produced on these plants.

Model Orchard, Minnesota State Experiment Station.

Of the flowers of the red rosa rugosa crossed with the hybrid perpetuals about 60 per cent set fruit.

Crosses were made as follows:

Red Rosa rugosa x General Jac.

Red Rosa rugosa x M. P. Wilder.

Red Rosa rugosa x Magna Charta.

Red Rosa rugosa x Paul Neyron.

Red Rosa rugosa x Duke of Edinburgh.

Red Rosa rugosa x General McArthur.

Red Rosa rugosa x Liberty.

Red Rosa rugosa x Richmond.

Red Rosa rugosa x Kate Montanie.

Red Rosa rugosa x Minnehaha.

Red Rosa rugosa x Mabel Chatney.

Red Rosa rugosa x Mrs. John Lang.

Red Rosa rugosa x Baby Rambler.
Red Rosa rugosa x Mad. Plantier.
General Jac x Rosa rugosa (Red).
Mad. Plantier x Rosa rugosa (Red).
No. 2654 x Rosa rugosa (Red).
No. 2655 x Rosa rugosa (Red).

The work with *potatoes* has been kept up for many years. We have aimed to select varieties that were disease resistant. Experiments along this line have been continued the past year, and over fifty varieties have been tested.

In the study of the flowers which we have made we have attempted to determine—if possible—why the potatoes did not set fruit as formerly. This study has revealed the fact that our common varieties seldom produce healthy, plump pollen, and out of over fifty varieties tested there were only seven or eight that had normal pollen. These varieties were as follows:

State of Maine, Washington, Green Mountain, Uncle Sam, Improved Peachblow (best pollen), Irish Cobbler, Snow Ball, Vermont Gold Coin.

Trial Orchard, Minnesota State Experiment Station.

We then attempted hand crosses between these varieties and also crosses between them and a wild kind known as Solanum Commersonii. These latter crosses produced about one hundred seed balls. These seed balls were unusually large, but practically contained no fertile seeds, there being only about four half-ripe ovules

in them all. The pollen of S. Commersonii was then crossed on some of our common varieties, but in no case was a seed ball produced. The flowers all dropped a few days after being pollinated.

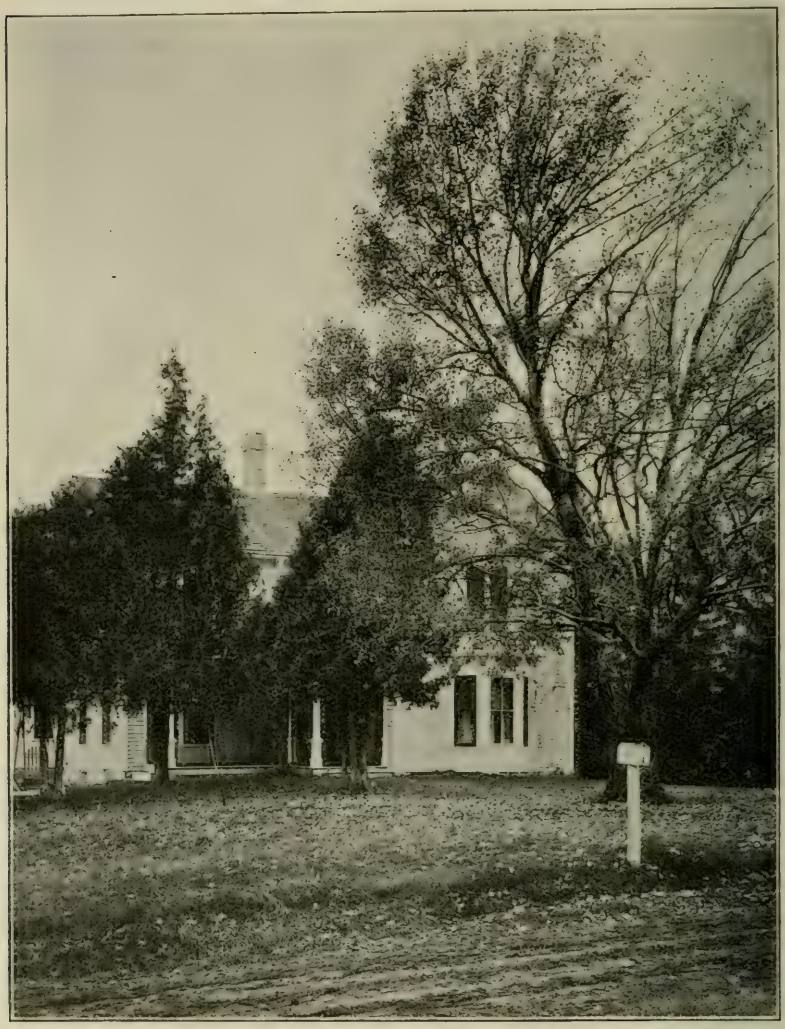
In connection with my position as a member of the Minnesota State Forest Reserve Board, I have outlined the plans for the nursery on the Pillsbury Reserve in Cass county. In this nursery we sowed a large amount of evergreen seed—mostly Norway spruce, in the spring of 1902. The amount of land used for this purpose was about one acre, one-half of which was covered with high brush screen and one-half with lath screens. The soil was a sandy loam, well adapted to the purpose. The seed sown consisted largely of Norway spruce, with also considerable quantities of white pine, white spruce, Scotch pine and jack pine. It is the intention of the board to make this reserve of 1,000 acres a demonstration of the possibilities of raising spruce for pulp in Minnesota. The seedlings are now four years old and were recently estimated. There are altogether about 600,000 seedlings, and the total cost up to date, including interest on the investment, freight on material shipped and one-third of the total cost of the screens, is a fraction over seventy cents per thousand. The screens are undoubtedly good for nine or ten years longer. The spruce are now from eight to twelve inches high and have very nice branching roots.

EXCELSIOR TRIAL STATION, ANNUAL REPORT. 1906

A. B. LYMAN, SUPT.

The apple, plum and cherry crop was light the past season; a few orchards of old trees that failed to bear last season produced well, while the crop on young trees of bearing size was very light. Trees are now in the best of shape and promise well for another season. It seems to be a mistake to spray only the bearing trees and leave those unsprayed that are not fruiting—keeping the foliage healthy helps the fruit crop another season. The crop on the old Wealthy was not profitable because they were overloaded, and the fruit was small; had a portion of the fruit been knocked off early in the season results would have been better. We were surprised to find that we had the Tallman Sweet in bearing. The tree is over twelve years old and had a fair crop of apples; this tree is not in perfect health, as it has been injured by some of the late winters. The McMahon is not doing much; trees set twelve years have not produced one good crop; while tardy bearers, like the Malinda, have done better. The Yellow Sweet makes a fine growth, but as yet is not

fruiting. Has been set twelve years. Peerless is another variety that is not making good; too unproductive, and the trees split badly as they get older.



Residence of A. B. Lyman, Excelsior.

The Okabena and Patten's Greening, that have lately been advanced to front rank by the society, are both doing well. They produce large crops of fine fruit, and that is what we are looking for. Those that have the University think well of it, and we expect to see this variety earn its place at the front some time.

The Jewell's Winter is making a good healthy growth, but has not fruited, as they are young trees. The Yahnke will fall below the Wealthy in hardiness; tree not a good grower, and the wood discolors badly.

There was very little blight the past summer, and many of the Wealthys that were injured last year have improved greatly. Trees on the whole are in good shape, and the interest in tree planting has not had a setback because of the light crop.

Mr. A. B. Lyman: The apple crop in our section was light. The Duchess did as well as any one variety, especially the old trees. There was a tendency of the Wealthy to overbear, and those who thinned their fruit had a very profitable crop, but those who allowed their trees to bear five apples where there should have been one, had an unprofitable crop, which had to be sold at small prices. I had a quantity of trees sent me by the Central Station, the McMahon, the Yellow Sweet and the Peerless, and these three we might group in one class. Years ago we spoke well of the Peerless, and it looked and did well as a young tree; but as it grew older it did not improve, and it is not considered very valuable now. I think also the Northwestern Greening is nothing to boast of. Our Northwestern Greening bore heavily last year, but they showed considerable weakness and are in bad shape.

GLENCOE TRIAL STATION, ANNUAL REPORT, 1906

A. H. REED, SUPT.

In making this, my annual report for the season of 1906, will state that my proving or trial grounds consist of twelve acres of black loam soil, with a deep clay subsoil. These twelve acres are set out to what is termed in horticultural parlance a commercial orchard, apple trees predominating, and the following named varieties are *bearing*, which I name in the order I consider the most worthy to be propagated in Minnesota, viz: Wealthy, Peter, Northwestern Greening, Hibernal, Peerless, Duchess, Patten's Greening, Longfield, Anisim, Whitney, Transcendent and Yellow Siberian crab.

The following varieties I have planted for experimental purposes as to hardiness, all of which have lived and thrived through one or more winters and summers without mulching or extra care, and I am a strong believer that in three years' time I shall be producing the Jonathan, Grimes' Golden, Baldwin, Roxbury Russet, Gano, York Imperial, King and other varieties on longer lived

trees than the Duchess. Added to the last named, growing as an experiment, are the Wolf River, Spitzenberg, Prior Sweet, Northern Spy, Regan, or Black Ben Davis, Winter Banana, Salome, Bismark and Yellow Transparent. Each of the above varieties have stood through one or more severe cold winters and bid fair to stand many others.

In starting my commercial apple orchard in 1900, I set each variety one rod apart each way, in rows forty rods long. Finding

Hibernal Apple Tree in Orchard of A. H. Reed, Set in 1900, in Bearing Now Three Years. From Picure Taken in Aug., 1906.

those of standard varieties too near together, I adopted a space of twenty feet between trees for my next setting and finally settled as about right in planting a commercial orchard upon rows twenty-four feet apart and twenty feet apart in the row. This distance between rows gives you open ground between rows to plant five rows of potatoes or whatever you choose to plant between, for cultivation.

This has been an off year for apple fruiting, there being but few blossoms and less apples. My Hibernal trees were the only

variety that produced perfect apples liberally, which has convinced me that the Hibernal apple tree is one of the best and greatest bearers of all varieties among the list of apples. With me they bore liberally the third year after setting and every year since. They are a September and October apple, pungent and good for cooking.

Of the twenty-five pear trees I set in the spring of 1905, of the Bartlett and Seckel varieties, all have lived and go into winter looking fine. I believe that pear raising ought to be encouraged.

Small Compass Cherry Tree, Four Feet High, Full of Fruit. On Place of Mr. A. H. Reed.

Twenty Early Richmond, English Morello and Wragg cherries, planted at the same time, have shown vigorous growth, and some of them bore large, handsome cherries this year. The so-called Compass cherry, which is more of a plum than a cherry, of which I have a dozen, with me beats all other trees in blossoming and fruiting. The trees usually bear the second year transplanted and are loaded with dark red fruit, a thing of beauty.

In plum culture I am somewhat discouraged. Highly recommended varieties, such as the Abundance, German Prune, Surprise and DeSoto have been killed the first winter or die a lingering death before bearing.

One lone *peach* tree has lived through three winters, and I hope to raise my first peach next season.

Three quince trees set in the spring of 1905 have lived but proved slow growers.

My Concord grape vines, that produced some fruit last year, failed to produce a bunch this year, although I laid the vines down and trimmed them last fall and gave a good cover. I will reverse my treatment of them this fall and leave them on the trellis.

Gooseberries of the Houghton and Downing varieties bore large, nice, smooth berries profusely, and I consider them among my best small fruits. Currant bushes have produced well.

Raspberries fruited fairly well without laying down in winter.

While on the subject of apple trees I omitted to mention the fact that there was little or no blight among apple trees this year, while last nearly every variety of a bearing age blighted badly.

I still hold that apple tree blight does not come from the sting of " bee," "bug" or "bacteria," but from the lack of sap food, from a lack of root system, and from too great growth of foliage. Two of my Transcendent apple trees blighted quite badly, growing in my garden on a south cant. I cut off all the blighted twigs and hung them among the foliage of unblighted trees in August, to test the theory that blight could be conveyed from one tree to another, and at this writing there is not a sign of any blight on any tree where the blighted twigs hung.

The extreme wet season and the scarcity of help has caused many things to go undone in farming, gardening and horticulture that otherwise would have been done. This will have to be put down as an off year throughout Minnesota.

Capt. A. H. Reed: I have made it my principal effort to produce hardy apples. The Hibernal is the only apple tree I have that bore to any extent this past season. I have become in love with that variety, and if its eating quality was as good as its bearing quality it would be an ideal apple. It has borne profusely for the last three years. My Wealthy and Patten Greening were scabby this year. In fact, no other tree but the Hibernal bore a fair crop. Of the Compass cherry I wish to say that I have been experimenting with it for the last six years. The one tree that I have, six years old, had borne profusely for the previous four years, but it gave way this season under a heavy load of fruit. The leaves turned yellow, and I cut back the tree considerably to save it. That cherry

—which is more of a plum than a cherry—ought to be called the Compass plum-cherry, rather than a cherry. It is an excellent tree and, in my opinion, worthy of propagation. It will bear young. It will bear when only two or three feet high, and bear profusely. It is a tree that is beautiful when in blossom, and it will pay anybody to plant them simply for the bloom if it does not fruit, but it fruits every year and fruits profusely.

JEFFERS TRIAL STATION, ANNUAL REPORT, 1906.

DEWAIN COOK, SUPT.

Our fruit crop as a whole was considerably below the average. Strawberries were nearly a failure, owing to winter injury of plants; raspberries were fair, and the plum crop, owing to late frosts, the plum rot (monilla) and the shot hole fungus, was not what it ought to have been. It was an off year for the apple, and we had about fifteen percent of a full crop.

The plum rot and the shot hole fungus seem to have established themselves in the plum orchard; in the apple orchard, the apple scab and the ripe, or the brown, rot fungus have apparently established a firm foothold. Owing to these fungi, the fruit of both the plum and the apple would keep only a very short time after being gathered, the rot fungus continuing to work on these fruits after they were in the crates. No variety of the plum was entirely free of the plum rot except the De Soto and several of its seedlings, which were less affected by it than were most other varieties.

There are several varieties of apple that so far have been free, or nearly so, from the brown, or ripe, rot. They are: Yellow Transparent, Blushed Calville, Antonovka, Whitney No. 20 and Okabena. With the exception of the Blushed Calville, these varieties have been entirely free from the apple scab fungus.

There has been no blight noticed this season in our apple orchard except a trifle on one overloaded Okabena tree. All varieties of bearing apple trees have developed a great number of fruit buds for next season's crop, and about all varieties are going into winter quarters in excellent condition. The Patten's Greening was disappointing in that it was so badly affected by the brown rot fungus, and it kept after being gathered only a short time. The Wealthy kept better.

The Yellow Transparent gave us a fine crop of fruit which sold readily at one dollar and fifty cents per bushel. We regard it as our best extra early variety—but it should be grown where there is a free circulation of air.

The Yellow Sweet we have had about eighteen years, but it has proven a shy bearer. Its season is early, and its fruit quickly rots from the inside. It does not sell well, as people do not care much for a sweet apple at its season. The Hibernal does not seem to have much, if any, value for this section, while it is a success as a fruit producer, but nobody seems to want the fruit when the Wealthy can be had. The Anisim was free from the scab fungus, but the fruit was much affected by the brown rot.

In crab apples the Early Strawberry and the Pride of Minneapolis did very well; other varieties were mostly taken by the scab fungus.

We have hopes of the Charlamoff apple, but so far it has proven a shy bearer.

The following varieties of apples, named in the order of their being ready for market, have for a series of years given us good results: Yellow Transparent, Blushed Calville, Duchess, Okabena, Antonovka, Wealthy, Patten's Greening, Northwest Greening and Malinda. The Jewell and Scott's Winter have also done very well, and for a late winter, real sweet apple the Broome Sweet is very promising.

The following late winter varieties are promising, but we have not as yet fruited any of them: Yahnke, Clemens, Salome and Milwaukee. The Golden Russet is not hardy here and has gone out.

Of plums the Freestone Wolf still holds its place here as a most reliable fruiter; the Clingstone Wolf bears very well; Eureka gives great promise as an early market variety. The DeSoto bloomed just at a time when rainy weather prevailed and therefore gave us but little fruit. The following varieties were very much affected and fruit about destroyed by the plum rot: Forest Garden, Compass, Wood, Iowa, New Ulm and Emerald. The Clingstone Wolf was our best late market plum this season.

A small patch of Snyder and Stone's Hardy blackberries, that are growing wild in one corner of our apple orchard, gave us a very good crop without the canes being covered for winter.

Our dwarf Juneberries (Success) bore full, as is usual with them, but much of the fruit was stung by some insect so that the berries dried upon the bushes, and there was no market for any of the fruit.

About all the varieties of evergreens we are growing continue to do well. The exceptions are white pine, which we have had for many years on trial—it is a failure here; a good many red cedars, some of which we have had growing eight or ten years, died the past season—apparently winter-killed—it seemed to make little difference

whether they were growing upon high or low land, but they succeeded a little better on the higher land. The hemlock spruce we have had but four or five years, and so far they are not succeeding any better than the white pine. The bull pine (Pinus ponderosa) is not doing any better. Of all the pines the Scotch is doing the best. The Colorado blue spruce (Picea pungens) and the Concolor are proving a success and are our finest ornamental trees. The American white spruce is a grand success; we consider it our best all round evergreen, especially for shelter belts. Next in value for windbreaks we would place the Black Hills spruce and the native black spruce. The latter named variety has the bad habit of holding its cones year after year. The Norway spruce is not hardy in exposed locations but with some shelter is a grand success. The western sand cherry (Prunus pumila), which were so promising a few years ago, have failed to give us any fruit the past three or four seasons, owing to its all rotting before getting ripe. We consider it a failure.

The buffalo berry has also failed with us. We have no use for the fruit, and the bushes die apparently without cause about the time they get to bearing well. The Russian olive (Eleagnus angustifolia) also fails about the time it gets to bearing nicely. It is not hardy here.

The winter of 1905-6 was not a very trying one on fruit trees and was in no sense a test winter; therefore we cannot say very much about the hardiness of varieties.

We find it is important to have a windbreak about an orchard and fruit garden, especially on the north and west sides of it, but not a dense windbreak. The orchard seems healthier when the air circulates freely through all parts of it. The cottonwood does well with us; it soon loses its lower branches, and we think it makes the best of windbreaks for the apple and plum orchard.

Mr. Dewain Cook: This station is in Cottonwood County, out on the prairie, on the highest point in Minnesota. I understand that it is about seven hundred feet higher there than it is here. It is a very flat country where I am. It has many of these little bog holes and considerable alkali. A gentlemen spoke yesterday about certain fruits that could be raised on alkali soil. The fact is the growth will not start as early in the spring and grows later in the fall. The wood does not mature so well in that alkali soil as it does in clear soil, but there are lots of varieties that do well in that soil that do not do well in the other. During one of those test winters we had years ago trees that were two hundred miles west of the Mississippi river did not kill as badly as those near the river. My idea is that those trees out there grew on the

hardest kind of soil, which increased the hardiness, but the season is not long enough to mature the late varieties. Our first planting was in the spring of 1885, and we have been planting considerably every year since.

In our plum orchard we have had, I think, about all the insect pests known. We have had the curculio, the plum gouger and a lot more, but they have disappeared, and the worst we have now is the shot hole fungus and plum rot. The plum rot is really the worst thing we have. It takes the blossoms in the spring—oftentimes so they do not set any fruit—and it takes the small fruit in the summer. Last year it was so bad we had no plums to market. We did not spray. We did a little spraying once on some special trees.

Our apple trees came out all right. We had no trouble about winter-killing. Sun-scald is something I do not know anything about. I never had a sun-scalded tree on the farm. We had a large amount of scab, and it was worse this year than last. I think in time everybody will have the scab, so the man who takes care of his orchard will be the only man who will get perfect fruit. Another thing which is dangerous in apple growing is the brown rot. We had it last year, and this year it was a good deal worse. Even the Duchess apple was not quite free from it, and you could see them covered with a white mould, which is the brown rot, and there were but few varieties exempt from that rot. In my paper I have enumerated some of the varieties. There are a few varieties that seem to be free from scab. The Okabena has not much scab, and the Whitney No. 20 has been exempt from it. The Hibernal is one of the worst, and we can certainly grow better varieties. People do not want to buy it. The Antonovka is free from scab and rot. The rot is the most serious thing we have to contend with at the present time, and if it increases much more we shall not be able to raise any apples.

One of the speakers mentioned the Compass cherry. I have been growing it for ten or twelve years. It was all right, but it has been subject to plum rot of late years, and the result is we get no fruit from the Compass cherries. It is going the same way with the plums, and we have not been able to get a blossom this year, and I do not know what it will do next.

It was a good season for red raspberries, and they did fairly well on high land, but there were few places where the black raspberries did well. The alkali in the soil seems to be detrimental to this kind of fruit, and raspberries do not seem to grow on that soil.

Mr. Seth Kenny: How do you succeed with dewberries?

Mr. Cook: I have not done anything with them for quite a number of years. There are but few dewberries grown, and somebody tells me that they grow where they are not taken care of and yield a lot of fruit. The dewberries are so badly troubled with anthracnose that it seems as though they would be entirely destroyed.

MONTEVIDEO TRIAL STATION, ANNUAL REPORT, 1906,

L. R. MOYER, SUPT.

The past season was an unusually wet one, the moisture deposit being at least fifty percent above normal. The Minnesota and Chippewa rivers were at flood height several times during the summer. Notwithstanding the wet season, apple trees were but little injured by blight, doubtless owing to the cool weather.

But while the apple trees escaped the plums suffered. Plum rot was unusually prevalent. Varieties like Aitkin and Cheney, having Prunus nigra for their ancestry, were a complete loss. The larger and earlier varieties of Prunus Americana suffered nearly as badly. Late plums did rather better, and were we to select the best plum from this year's experience it would be the De Soto. Nothing was done here to check the ravages of the plum rot, and the result was an almost complete loss of the crop. The only good Americana plums that the writer saw this year were raised in South Dakota, near the Missiouri River. The Americana plum has been a great disappointment to planters.

Among the experimental apple trees the Blushed Calville gave the most satisfaction. Several days earlier than the Oldenburg, it is always in eager demand for cooking and eating out of the hand. It is a regular and annual bearer of fine flavored, white skinned apples. It would hardly be possible to grow it for the market, for it is thin skinned and easily bruised, and will keep for but a few days. It makes apple sauce of such exquisite quality that we find it profitable to can it.

Estelline is a small apple—about the size of Anis—ripening between Oldenburg and Wealthy. It is a rather better bearer, although of not quite so good a quality as the Anis.

It seems probable that on the heavy soils of western Minnesota none of the pines or spruces will ever find a very congenial home. The soil is too rich. It is mostly of glacial origin and came from the northwest. Unlike the drift soils of eastern Minnesota, which were formed largely from archaic rocks, the drift in western Minnesota is formed largely from magnesian limestone broken and ground up by the glacial flow. It is perhaps the richest soil on the continent in its agricultural possibilities. Except in spots where the limestone-laden-boulder clay has been modified by water, or where the winds have carried on to the drift a sort of loess, or loose light soil, the raising of evergreens has been difficult.

It is on a light soil, perhaps of wind formation, in which the 8,000 pines furnished to us by the Forestry Division of the Depart-

ment of Agriculture in 1898 were set. The plantation has been very successful. The great bulk of these trees are Scotch pine, but there was included in the planting quite a quantity of Austrian pine, besides a number of trees of bull pine, or Pinus ponderosa, or, as some botanists prefer to call it, Pinus scopulorum. Part of the planting was made with nurse trees of elm and box elder, part alternately with symphoricarpos, and part was a pure culture of pine. The Scotch pines have now reached a height of from twelve to sixteen feet, and bid fair to wholly overtop and crowd out the Austrian pines. Many of the trees made a growth this year of from two to three feet. The pines planted by themselves did the best and have established for themselves forest conditions, crowding out all weeds. Those planted with symphoricarpos have done better than those planted with deciduous nurse trees. Probably eighty or ninety percent of the Scotch pine seedlings grew. The Austrian pine did not do so well, and the poorest stand of all was obtained from the Pinus ponderosa seedlings. The surviving trees of Pinus ponderosa have become well established and are growing nearly as fast as the Scotch pine. Nine years is but a little while in the life of a tree, but the Scotch pine is doing much better than we expected after the experience we have had with older trees on our home grounds.

At present writing the most showy shrub on our grounds is Viburnum opulus. It was free from aphis this year, as was also its garden variety, the common snowball. This viburnum is common in the forested regions of our state and has been collected as far west as Glenwood. The writer observed it this summer in the Leaf Hills, at the head waters of the Chippewa river.

An excellent bulletin on "Ornamental Trees, Shrubs and Herbaceous Plants" was issued by Prof. Green last April. It should be in the hands of every plant lover in Minnesota. Ask for Bulletin No. 96 of the State Experiment Station, at St. Anthony Park.

Mr. Busse: What particular shape is that apple you spoke of? What is the size and color?

Judge Moyer: It is a white apple and is about the size and color of the old Early Harvest that used to be raised in New York State. It is called the Blushed Calville, but there is not the sign of a blush; it is perfectly white.

PLEASANT MOUNDS TRIAL STATION, ANNUAL REPORT, 1906.

J. S. PARKS, SUPT.

The peculiar features of the fruit crop this year in this section are unusual. Some large orchards, with light crops last year, had not enough for the owner's family use this year, while a few trees on adjoining farms were loaded with choice fruit. Some trees in our orchard loaded last year were loaded this season, and some trees of the same varieties bore no fruit either year. The same peculiar condition was found in apples, plums, nuts and other fruits.

J. S. Parks and His Favorite Apple, the Wolf River.

Our experiments in top-working apples and plums the last few years have been attended with very good success, unlike our experience of thirty years ago, when we top-worked a few hundred apple trees, mostly Siberian, Transcendents and all the shades of hybrids, wild crabs, etc.—only one alive and thriving, that a Wisconsin seedling on a Duchess eight or ten inches in diameter. I very naturally had no faith in top-working, but coming in contact

with the experience of our horticultural society and having Virginia crab and Hibernal stock to graft on, and trying to do something in our trial station, we commenced again and found with proper stock to graft on success was assured. Our Virginia crab trees were too large to whip-graft on, and not wishing to use the cleft graft and split the stock and leave a bad place to decay, we went into the tops of quite large trees and cut out limbs, sometimes three or four inches in diameter, about the time the leaves were half grown—the best time to cut large limbs to have them heal quick and sound—and waited developments. The next season we had a fine lot of thrifty sprouts to whip-graft on, and, as has been demonstrated, it was a complete success. This season on two-year-old grafts we had as fine Baldwin apples as I ever saw, and we are expecting later to get Spys, Greenings and other half hardy kinds to bear.

Our plums we top-worked, a score or more of new sorts, on sprouts in a thicket where we could find just the size and shape we desired, put on one or more grafts on the top of, say, two-year-old sprouts three or four feet from ground, and made the top entirely out of the graft. We have some ideal trees in that way and had nice specimens of fruit this season on scions two years' set. We found this a very satisfactory way to test new varieties.

OWATONNA TRIAL STATION, ANNUAL REPORT, 1906.

THOS. E. CASHMAN, SUPT.

The outlook at the station is very encouraging indeed. The thinning out of the poor growers, bad blighters and varieties that produced inferior fruit, together with thorough cultivation, has given worthy varieties an opportunity to show the stuff of which they are made, and the size of the fruit has increased materially. A great many new seedlings have borne this year for the first time, and some of them are splendid sorts.

The question of hardiness was settled at the Owatonna station the moment that former Supt. Dartt planted the seed selected from our hardy northern varieties. It is true that some of them had tender ancestral weakness instilled into them and succumbed to the winter's blasts and Father Dartt's "hurry along system" of girdling, but the majority of them are equally as hardy as the parent varieties, and many new seedlings have borne this year for the first time, and a number of the Wealthy seedlings are hardier than the parent—and, by the way, we will hear from a number of these later on.

I exhibited 138 varieties of seedlings from the Owatonna station

at the Minnesota State Fair last September, and must say that they excited much favorable comment.

I was very anxious to have the best specimens on exhibition at this meeting and began by keeping a close watch of the ripening fruit to prevent the boys from stealing it until the finest of the fruit was ready to pick and box. This was done, and the apples placed securely (as I supposed) in our cut flower cooling room, but to my disappointment about three weeks ago I found that the employees had helped themselves until there was nothing left to bring to the horticultural meeting, and we shall have to live in hopes of being more successful next year. I do not think those fellows will steal any more exhibition fruit from me, and you would not ask why if you could have heard me holler.

The apples grown at the station, with the exception of those picked for exhibition purposes, were turned over to the State School and amounted to 217 bushels.

We did considerable top-grafting this season, having worked over nearly all the Duchess, Hibernal, Virginia crab and Dartt's Hybrid growing at the station with the best seedlings originated there, such as Phoenix No. 50, Wealthy No. 6, Seed M, etc., also with the Black Ben Davis, Salome, Grimes' Golden, Jonathan, Northern Spy and Winesap. Our object in top-grafting the last named sorts onto our hardy trees is to determine what can be done with these tender varieties that bear delicious fruit when grafted onto our hardy stock. Up to date the top-grafting has been a success, as nearly all the scions made a satisfactory growth.

On the ground we tile-drained and prepared last season, we planted a number of varieties originated at the station, such as Phoenix No. 50, Banana apple budded on Pyrus baccata, and a large number of Wealthy seedlings.

We have sprayed all the trees at the station three times this season. The first time with Bordeaux mixture before the trees leaved out, the second time with Bordeaux and Paris green after the blossoms had fallen off, and the third time with Bordeaux about July 15th. This had the desired effect, for the fruit gathered this year was nearly all clean and perfect specimens.

This winter we intend to mulch all the trees at the station with barnyard manure, as the fertility of the soil is nearly exhausted from the continuous drain made by the trees, which have been growing so thickly and nothing returned in the way of leaf mould, as there would have been in a forest, where the leaves remain where they fall, while in a small orchard the wind blows them away. This enrichment of the soil will have a tendency to produce larger and

better fruit and will also encourage blight in the varieties so inclined, thus giving us an opportunity of disposing of the bad blighters before any further time is wasted upon them. Everything that blighted to any extent was removed last year.

It will be several years before all the seedlings at the station come into bearing, and in the meantime we should experiment further with the varieties which have been bearing for some time and determine by piece-root grafting what they would do if propagated in that manner.

Some piece-root grafted trees do not do as well as the parent, and many do a great deal better; therefore I do not consider that the experiment has been sufficient until different methods of propagation have been tried and on various kinds of soil.

Our work at Owatonna will be seriously handicapped unless adjoining land can be secured, and if that cannot be done the work should be extended to other parts of the state.

Mr. T. E. Cashman: I will say that my attention has been called to a matter that has received but little attention, to my knowledge, from the average horticulturist, and that is, the depth to which an apple tree should be planted. I find at the Owatonna experiment station that shallow planted trees are considerably injured in the root. I found where the roots were at a depth of five inches the tree would kill.

There is no question but what the seedlings at the Owatonna station are as hardy as any produced in this part of the country. Father Dartt began by planting seed of the hardy Orange crab, the Virginia crab, the Hibernal and the Duchess, and we certainly have hardiness at the Owatonna station. What we have to determine is the growing quality and the quality of the fruit.

When speaking about depth of planting there is no question in my mind but what it makes a difference in the hardiness of the root. If you do not get the root down to where it is not subject to freezing and thawing, it is going to be injured. My idea is that trees should be planted at least twenty inches deep, to get the union at least a foot below the surface of the ground. Put it down where this alternate freezing and thawing in the winter is not going to affect the tender roots. We had weather which thawed the ground from six to ten inches, and there were places where the ground had thawed to different depths, and where it had reached the roots they were injured to that extent. It did not seem to injure the body of the tree, but the little roots, the feeders, were more or less injured. Therefore, I think this is a question on which we should dwell with considerable importance, planting the trees deep.

Some will take trees and plant them deep in heavy soil. If your soil is too heavy, you have got to drain it. You cannot give your apple trees wet feet and expect them to exist. We have to plant them deep in this country. It is easy to get rid of moisture by

draining. A little tile drain does not cost much. Put it down four feet deep and run feeders three or four rods apart. That will do away with the surplus moisture, and you can grow trees almost anywhere except where the water stands on top of the ground. We have heard here of many trees dying in many parts of the country on account of the wet season, and it is either on account of their being planted on low ground, or the ground was not properly tile drained.

I have never known when we kept the ground frozen around the tree and kept it mulched that we have been troubled with the loss of roots. The trouble comes where the ground thaws to a considerable extent and is then followed by a hard cold snap which freezes it again. The man who will mulch his trees every fall will get along without planting his trees deep, and you cannot induce the average man to plant his trees deep. If we could get him to plant his trees deep we would do away with a whole lot of this trouble, because we find on an average in three years out of five trees are not mulched. We should all make a practice of mulching whether we plant deep or not. In order to obviate this trouble we should always advocate deep planting.

We have great promise at the Owatonna Station. The thinning out process has been begun of the larger varieties, and trees bearing the best quality of fruit are kept to show what they are good for. We have been engaged in the past three or four years thinning out the bad blighters, the poor bearers and the varieties bearing a poor quality of fruit. I believe a good many specimens have been grown on trees at the station that are going to be among our best varieties in the future.

We are somewhat handicapped at the Owatonna station for want of room. The majority of our trees are seedlings. They do not always do as well when grafted. Quite often we find a seedling that does not do well when grafted, and we find sometimes it is better when grafted. Therefore, we find it necessary to have more ground to promote this system of experimenting in order to eliminate the poorest varieties and preserve to the state the best varieties. There are a great many seedlings at the station that will not come into bearing for a number of years, and those, I believe, should be left there until we find whether they are of any value or worth continuing further.

The President: I neglected to state in introducing Mr. Cashman that he is one of the most substantial and enthusiastic friends that horticulture has in this state. His district honored itself by electing him to the state senate at the recent election, and we shall have a friend at court that we can depend upon. (Applause.)

Mr. Brackett: I think if the horticulturists of the state have any legislation to enact in the future we should have a horticulturist in the legislature, and I think Mr. Cashman is just the man to represent us there.

SAUK RAPIDS TRIAL STATION, ANNUAL REPORT, 1906.

MRS. JENNIE STAGER, SUPT.

The last season in this part of the state was very poor as far as fruit is concerned. The strawberries everywhere around here have died out, owing, we thought, to the dry condition of the ground of the fall and winter before. Raspberries bore not at all; also currants and gooseberries had grown weary in well-doing and gave us no fruit.

Home Grounds of Mrs. Jennie Stager, Sauk Rapids.

Of trees a very few apple trees bore, and the plum trees behaved in the same manner. Quite a number of apple trees started fruit and then were blown over by the wind and died. On examining them, even the largest roots looked as though they were sawed off. I thought gophers had done it, but, if they did, could not catch them.

Watermelons and muskmelons bore exceedingly well, and I had quite plenty of lima beans and tomatoes, but that was about all.

WEST CONCORD TRIAL STATION, ANNUAL REPORT, 1906.

FRED COWLES, SUPT.

The past season has been very encouraging in some ways and in some ways has been disappointing. When the apple and plum orchards were white with bloom, we had hopes of a full crop, but the cold and damp, rainy weather relieved them of their crop, and as a general rule it was a failure, although some old orchards bore well. Our trees seem to be full of fruit buds for another year, and we hope for a favorable season.

Last spring we started out determined to thoroughly test both liquid and dust spraying. We gave the first spraying before the leaves started. We sprayed for scab, using Gould's liquid sprayer and Leggett's dust sprayer. When the next spraying should have been done it rained until the trees were in full bloom, and again as the blossoms fell there was more rain, and then it was neglected. But although not giving it a thorough test, we are satisfied that it helped our orchard. We could see no difference in the liquid and dust spray.

Currants and gooseberries were a splendid crop, the Victoria giving us the best yield. We like this variety of currant, as it is nice sized, has a long bunch, hangs on the bushes well and is very hardy. Downing gooseberry gave a bountiful crop of very large, nice fruit. We keep the currant worm in check by using the dust sprayer. Early in the season we use lime and Paris green; after the fruit is full grown, if worms appear, we use white hellebore. This is used in the morning while the dew is on, and with the dust sprayer it is very quickly and thoroughly applied.

Plants and vines that we set have done well and made a remarkable growth. We planted two acres of strawberries and never had a better stand, and when covered this fall they were as healthy as could be and not a break in the whole bed. We used the dust spray, however—perhaps this was what gave the foliage such a healthy appearance.

The strawberry crop the past season was not very satisfactory only in the price, which was very good. Our standbys are Warfield, Sen. Dunlap, Lovett, Splendid and Enhance. This year we are trying several new varieties. We have also tried the wonderful "pedigree" plants, setting them side by side with our own, but fail to see any material difference, only that our plants show up the best—the same varieties and same soil. We have set our plants by the side of the "pedigree" plants at several places in the state and fail to find any difference whatever. But for a number of

years we have been practicing the selection of the best and largest plants for our plant beds and find that our plants are much stronger than before.

The raspberry yield was very good, Older and Loudon being the principal crop. We have set about one acre of King, which are looking very nice. We like the appearance of this variety much.

We are much interested in the evergreen and think that every-

Snowball Hedge on Place of Mr. F. J. Cowles.

one who has a home should plant more of these trees. What makes a nicer hedge than the arbor vitae? This with a little trimming will grow in any shape that one wishes. And then the spruce and pines make such a beautiful windbreak setting two rows, setting them alternate. Readers of this article, set out evergreens this coming spring, and in a few years you will say that this was the best investment you ever made! The Carolina poplar has made a growth of six feet this year from cuttings set in May. This is a fine tree, much better than the cottonwood. In our vicinity

the cottonwood is being sawed into lumber wherever it is possible. One man saved $700.00 on a barn that he built the past season by using the cottonwood taken out of his yard. If every one would plant a few hundred Carolina poplars and some golden willow, in a few years they would have plenty of sawlogs and fuel.

Beautify our homes by planting a few hardy ornamentals. Those that have done well with us are the hydrangea, spirae Van Houttii, spirae Anthony Waterer, the bush honeysuckle, trumpet honeysuckle, perennial phlox, pæonies, rosa rugosa—all these are hardy without winter protection. Many other hardy and half-hardy plants could be added to this list that are satisfactory. But each one must choose as his individual taste dictates.

WRENSHALL TRIAL STATION, ANNUAL REPORT, 1906.

F. B. MC LERAN, SUPT.

All stock at this station has done well so far. Nearly all trees set two years ago are still alive and thrifty. Duchess and Hibernal bore this year. Plant blossoms were killed by late frost. Out of forty-three varieties of *strawberries* grown last year, I would recommend for general planting in this section: Warfield, Sen. Dunlap, Sample and Dorman.

Of Currants: Long Bunch Holland and North Star.

Gooseberry: Pearl.

Raspberries: I do not recommend any as yet, as I have not given them a sufficient trial.

All ornamental stock has done well.

As this is a new station, all stock is yet under trial, and I do not care to do much recommending as yet.

Flowers around Fire Engine Houses.—A somewhat unique plan of improvement is under execution in Denver, Colorado. Mrs. Martha Shute, secretary of the state board of horticulture, has arranged to furnish the fire fighters of Denver with seeds so that flowers can be planted around the fire stations.

Anent Government Seeds.—Farmers' Organizations in all parts of the country are taking active and decisive steps to express their disapproval of this farce of pretending to favor the agricultural class by distributing common varieties of garden seeds. Farmers would welcome the introduction of new and rare seeds, that they might improve their own productions, but they look upon this attempt of Congress to palm off on them varieties that have been discarded for a score or more years as new, as an insult to their intelligence.

CROSSING FRUIT FLOWERS.

MAX PFAENDER, ST. ANTHONY PARK.

The crossing of flowers opens a new field to the horticulturist. It vastly increases the opportunities in plant improvement. The raising of seedlings followed by careful selection is the usual way of improving our fruits and other plants. Here we depend entirely upon the very slight and comparatively insignificant variations which are found in all plants. Also, in this process we get the characters of one common parent if the plant is self-fertilized, or from two parents of the same variety if the plant is insect-pollinated, or dicœcious. The chances of a good seedling from naturally pollinated parents are very meager, and we never know just what we will get. But if we resort to crossing we can just about tell what the offspring will be. We can combine in the offspring the desirable characters of the two parents. We can combine hardiness with prolificness, quality or disease-resistance. More often we resort to crossing in order to break the type: i. e., to make the species produce a great number of great and deviating variations. From these many variable forms we can select the best and start to fix the type, which is done by in-breeding and selection—or we propagate the new and desirable variant by cuttings or graftage. Since we can do this, would it not be much more profitable to cross fruit flowers with a definite end in view than to leave our affairs in the hands of chance and keep on raising seedlings? I do not want to discourage the raising of seedlings, but I would like to impress upon you the fact that judicious crossing followed by careful selection offers greater opportunities and a much more fascinating field.

The theory of plant breeding is still in its infancy, and very little is understood concerning the laws which govern this art: so I shall just concern myself with the practical side of crossing.

First, we must understand the structure of the flower with which we are working. Most of the fruit flowers, as strawberry, raspberry, plum and apple flowers, are quite simple to understand. In the center of the flower we have one or more pistils, which on their top end bear the stigma, or receptive area. In pollination the pollen falls on this receptive area, then the pollen grain breaks open and sends a long slender tube down through the pistil. At the bottom of the pistil are located the ovules, and these are then fertilized by the contents of the pollen tube passing into and fusing with the contents of the ovule. This, then, is fertilization. (See Figure 1.)

Surrounding the pistils we have one or more circles of stamens.

The stamens consist of anthers and filaments. The anthers contain the pollen, and they open soon after the flower has expanded. The pollen represents the male element, while the stigma, style and ovules constitute the female reproductive organs.

In some flowers pollination takes place before the flowers open,

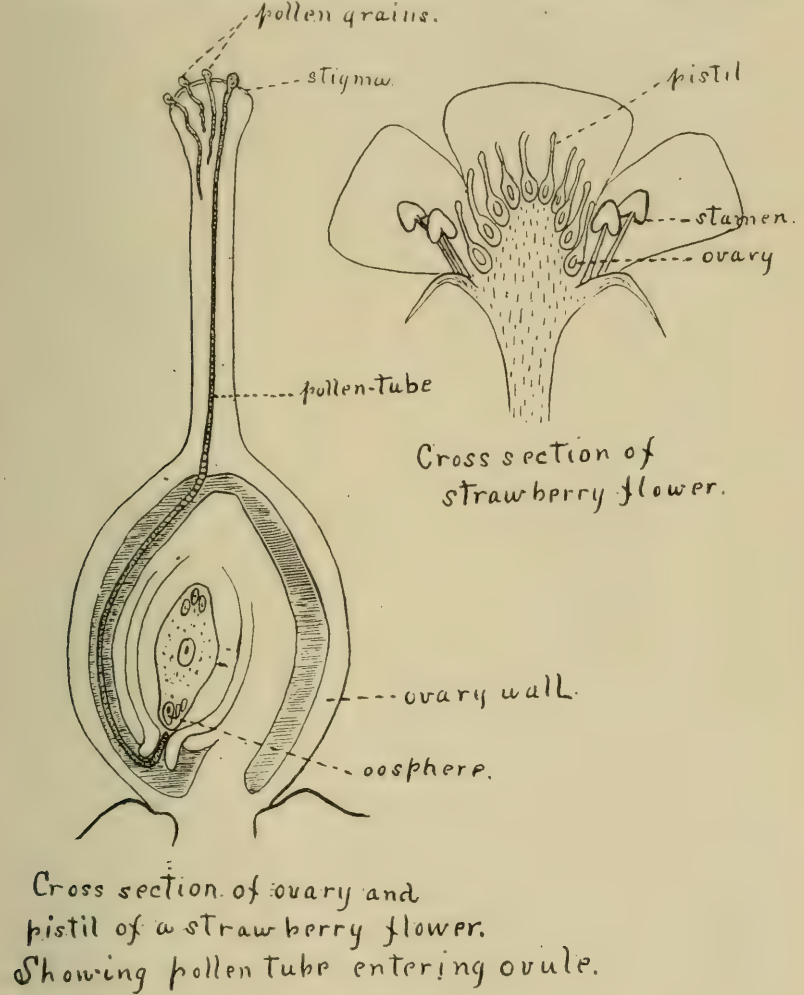


Figure 1.

as in the case of wheat. Here we have a case of self-fertilization. Many flowers whose pollen is shed just when the stigma has become receptive are also self-fertilized because their own pollen has the first and best opportunity to do the pollinating. But most flowers, especially fruit flowers, are pollinated by insects, and in

order to insure cross-fertilization the stigma becomes receptive either before the pollen is shed or after it has all been blown away. In either case the chances for cross-pollination are much greater than in the case when the pollen is shed at the same time that the stigma becomes receptive. In hand-pollinating we must know the structure of the flower, and we must be able, with the aid of a lens, to tell just when the anthers open or when the stigma becomes receptive. It is known that the stigma is receptive when a viscid transparent substance appears on its surface.

In crossing the main thing, of course, is to get the pollen of one flower onto the stigma of the other and just at the right time. The parents should be selected with a distinct ideal in mind. To avoid

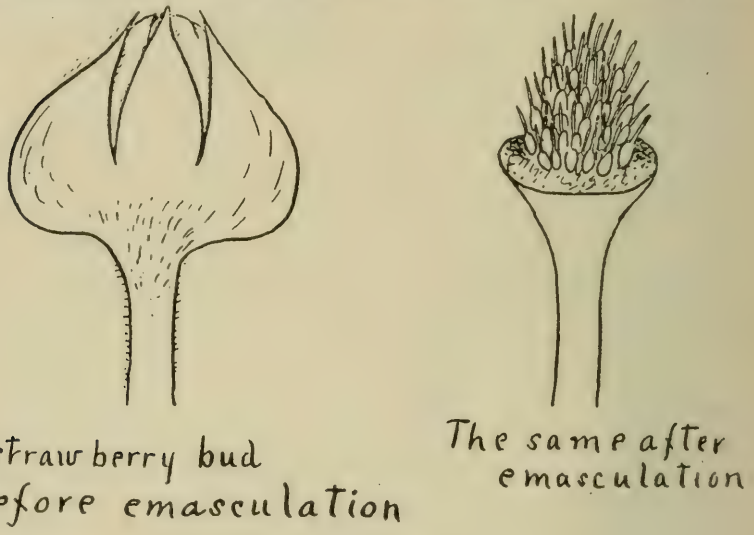


Figure 2.

self-fertilization or pollination from any other source we must take various precautions. The flower which is to be the female parent is emasculated a day or so before it would open, i. e., the bud is opened by hand, with or without the aid of instruments, and all the stamens are cut out and removed entirely. In the case of strawberry flowers this can be done best with the thumb nails, and it works better and quicker than if a scalpel or tweezers are used. It is essential that the anthers should be removed before they open, and no pollen should be allowed to escape in the process of emasculation. This act prevents self-fertilization. But we must also prevent any other pollen from alighting on this stigma, either by wind or insect, and so we cover the emasculated flower

with a paper bag or a small cloth sack made for the purpose. (Figure 2.)

About a day after emasculation the stigma will become viscid, i. e., receptive, and we are now ready to apply our selected pollen. The best way is to pick the flower wanted, just when the anthers are opening, and to shake its pollen on the stigma of the emasculated flower. Care must be taken not to hurt the delicate stigma. Sometimes a camel's hair brush is used to transfer the pollen, but this is too bulky when we are working with only very small amounts of pollen.

Pollination is completed, and nature will do the rest. The bag is again replaced and left for a week or so, the flower is labeled, to show parentage and date of the cross.

If we have been careful and exact in our operations and have

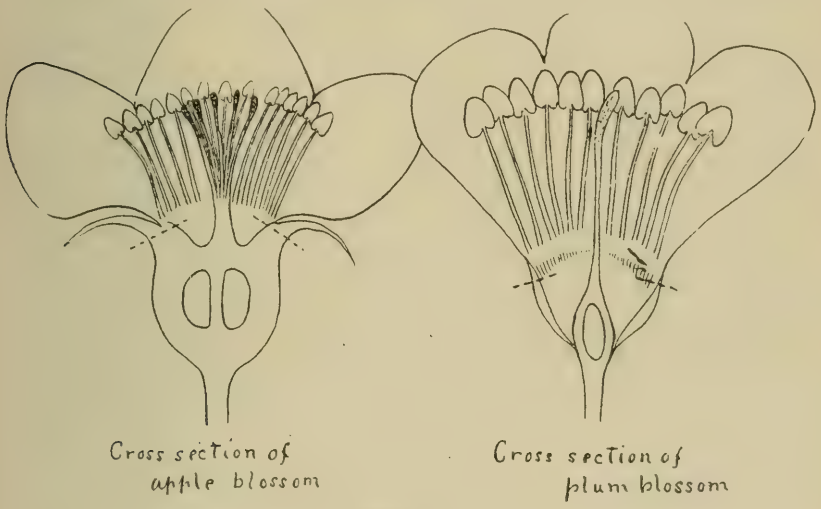


Figure 3.

applied good pollen at the right time, then we will get from fifty to seventy-five percent of the crosses to set fruit.

The best time to pollinate is in the forenoon from 9 to 11 o'clock. Wet weather is not favorable to crossing. Use fresh pollen whenever it can be had, although most pollen keeps a day or two if in a dry place. After the fruit has ripened it is handled in the customary manner, but the different crosses should be kept separate.

In conclusion I would like to say that any person who has done any crossing, or who is interested in it and its results, will surely find it a very enticing and fascinating pursuit.

SOUTH DAKOTA STATE HORTICULTURAL SOCIETY, ANNUAL MEETING, 1907.

L. R. MOYER, MONTEVIDEO, DELEGATE.

The traveler entering South Dakota on the main line of the "Milwaukee" railroad sees spread out before him the fertile prairies of Grant County, lying southwest of Big Stone Lake. The most striking feature of the landscape is the great range of hills lying like a blue cloud along the southwestern horizon. This is the Coteau des Prairies of the early French voyageur. These hills rise to a height of about nine hundred feet above the general level of the prairies of western Minnesota, reaching an elevation of from seventeen hundred to nineteen hundred feet. They extend from a point west of Lake Traverse, near the north boundary of South Dakota, in a southeasterly direction some sixty to seventy-five miles, entering Minnesota southwest of Canby. These hills consist of a bed of cretaceous rocks overlaid by an immense deposit of glacial drift. This drift, like that of the prairies of western Minnesota, was brought down from the north by the ice sheet and includes in its make-up an immense amount of broken up and decaying magnesian limestone rock. The soil is of unsurpassed fertility, the limestone rock filling it with plant food that is apparently inexhaustible. This range of hills is crossed by many streams which have cut deep ravines into the slope. These ravines are timbered, the principal tree being burr oak. Here is an ideal orchard site as yet but little utilized, with the favorable northeasterly slope.

The meeting was held at Groton, in the eastern part of Brown County, at the foot of the westerly slope of the Coteau. Groton is two hundred seventy miles west of Minneapolis and is an active, enterprising city. The farmers in the neighborhood appear to be prosperous, and the city was full of enthusiasm. The meetings were held in the opera house, and among those present were such leading horticulturists as C. W. Gurney, of Yankton; E. D. Cowles, of Vermillion; George H. Whiting, of Yankton; A. Norby, of Madison; M. J. DeWolf, of Letcher; and W. S. Kinkade, of Sioux Falls. The thermometer registered 34 degrees below zero, and a strong prairie wind was blowing, but this did not dampen the enthusiasm of the meeting.

A paper by J. H. Berry was read, raising some questions as to the value of the Compass cherry and other varieties of the sand cherry, including the Sioux and Tomahawk. Mr. Whiting thought that the Sioux and Tomahawk were of no value. Mr. Gurney said that the Sioux was so much better than the Tomahawk that the chickens would even pick it out in the row and eat it. There

seemed to be a concensus of opinion that the Compass cherry failed after bearing three or four crops. Mr. Norby said that he never had favored it, but that it had been a paying shrub for the nurseryman. Mr. Gurney told the story about some sand cherries that were planted on the state line; those in Dakota lived, but those in Minnesota died. Mr. Cowles testified that the Sioux and the Tomahawk were the only sand cherries that he had ever been able to fruit. The writers of the papers seemed also to have a poor opinion of the Siberian sand thorn. In the discussion which followed it was stated that the Siberian sand thorn is a dicecious shrub growing from six to eight feet high, with beautiful silvery foliage, producing a berry somewhat resembling the buffalo berry. It is a fine ornamental shrub, and the fruit is valuable for making jellies, etc. It is said to be very prolific.

The Bursota plum was shown at the meeting—a cross between the DeSota and the Burbank. The Emerald plum, a cross between the Brittlewood and the Burbank, was the finest plum that Mr. Norby had ever seen.

As to winter protection Mr. Cowles recommended wood veneer, but Mr. Whiting thought burlap better. Another member suggested that window screen was better still.

A paper on hedges by Mr. Cowles and another on the buckthorn by Mr. Miller brought out an interesting discussion as to the desirability of hedges. Opinions differed. A closely trained buckthorn hedge was a success at Huron. From an artistic point of view the closely trimmed hedge was condemned. Mr. Norby spoke of the great beauty of the buckthorn when left to grow naturally without trimming. There is a fine buckthorn hedge five miles northwest of Groton.

A paper by Mr. Newberry brought out the fact that the Russian olive is a most desirable tree all over South Dakota. It is emphatically the tree for a dry country.

Mr. Norby, of Madison, spoke enthusiastically of the ponderosa pine, and said that he was fully convinced that there is not a farm in South Dakota where plenty of evergreens cannot be grown. He would cultivate in summer rather than mulch, but added that a mulch might be a good thing in winter.

At the Tuesday evening session the mayor of Groton formally welcomed the society, and an interesting musical and literary program followed. The Hon. Carl Gunderson contributed an interesting paper on the prairies west of the Missouri river. He spoke appreciatively of the scenery and described the glory of a prairie sunset. He spoke of the teepsenee, the native food plant of the Indians,

known to the early Frenchman as pomme de terre, and to botanists as Psoralia esculenta.

At about ten o'clock a belated snow-bound train brought Prof. Hansen, and the applause which followed testified to the honor and esteem with which he is regarded at home. He spoke entertainingly for an hour and a half about his trip last summer and fall through England, Denmark, Sweden, Norway, Finland, Russia, Siberia and Japan in search of the hardy yellow alfalfa.

At the Wednesday session President Synoground spoke entertainingly about his small fruit plantation.

A paper by D. M. Dickerson on the raspberry brought out the fact that the only place for the raspberry in South Dakota is in the shade of trees. Prof. Hansen is propagating a seedling called the Sunbeam, a cross with a wild raspberry from Crookston. Dr. Marchant, from Ellendale, North Dakota, spoke of his success with raspberries at that place.

It seemed to be generally admitted that currants are an uncertain crop in South Dakota and that gooseberries so far as tried are almost an entire failure. Currants do best in the shade of trees.

Interesting papers were read on tree planting on the prairies. It seems that green ash is the tree that grows best further west, but it needs the shelter of some faster growing tree while it is young. Box elder, and even the elm, kill out in some places during dry seasons. All forest trees require good cultivation.

Mr. DeWolf gave his experience with plums. For varieties he prefers the Hawkeye, Forest Garden, Cheney, Wyant and Rockford. The curculio and plum rot are spreading throughout South Dakota, and plum growers there are beginning to experience the same troubles that beset the Minnesota grower.

Mr. Whiting, of Yankton, advocated clean cultivation in orchards. He would discontinue cultivation on July 1st and mulch during the first winter.

Colonel Gurney read an excellent paper on the decoration of school grounds. It seems that they have a statute in South Dakota requiring school trustees to plant and care for trees and shrubbery around all schoolhouses. This paper awakened an interesting discussion. A fine address was delivered by Prof. Hansen on the æsthetics of home decoration.

Under the head of civic improvements a fine report was made from Sioux Falls showing the interest that has been awakened there among the school children for the decoration of home grounds and in the cultivation of flower gardens.

It is interesting to note that the horticulturists of our neighboring state are even more wide awake than ourselves in regard to every-

thing that goes to beautify and adorn their home grounds and their public parks. They seem to realize the fact that horticulture includes something else than apple raising.

An elaborate banquet was given to the society on Wednesday evening by the citizens of Groton, and your delegate came away greatly impressed with the generosity and good fellowship of the citizens of South Dakota, as well as with the highest admiration for their courage and enthusiasm in decorating and adorning the great South Dakota prairies.

CONSTITUTION,
PLANT BREEDERS' AUXILIARY OF THE MINNESOTA STATE HORTICULTURAL SOCIETY,

President, J. M. Underwood, Lake City.

Secretary, Clarence Wedge, Albert Lea.

ARTICLE 1. *Name.* This society shall be known as the "Plant Breeders' Auxiliary of the Minnesota State Horticultural Society."

ART. 2. *Object.* The object of this society shall be to encourage the origination of new horticultural plants adapted to Minnesota. A book shall be prepared and maintained by the society in which to register new fruits, trees and plants that have shown by performance their worthiness to be so registered.

ART. 3. *Membership.* Any member of the Minnesota State Horticultural Society who is engaged in originating new varieties of trees or plants may become a member upon application to the secretary of this society, there being no membership fee. Membership to terminate with that of the Minnesota State Horticultural Society and the occupation above stated.

ART. 4. *Officers.* The officers shall consist of a President and a Secretary and Treasurer, holding office one year, and elected annually during the winter meeting of the Minnesota State Horticultural Society.

ART. 5. *Meetings.* The society shall hold two regular meetings annually, to be called by the President at the time of the meetings of the Minnesota State Horticultural Society.

ART. 6. It shall be the duty of each member of the society to make a report of the work he has done during the year, the same to be made at the winter meeting of the society on blanks provided by the secretary.

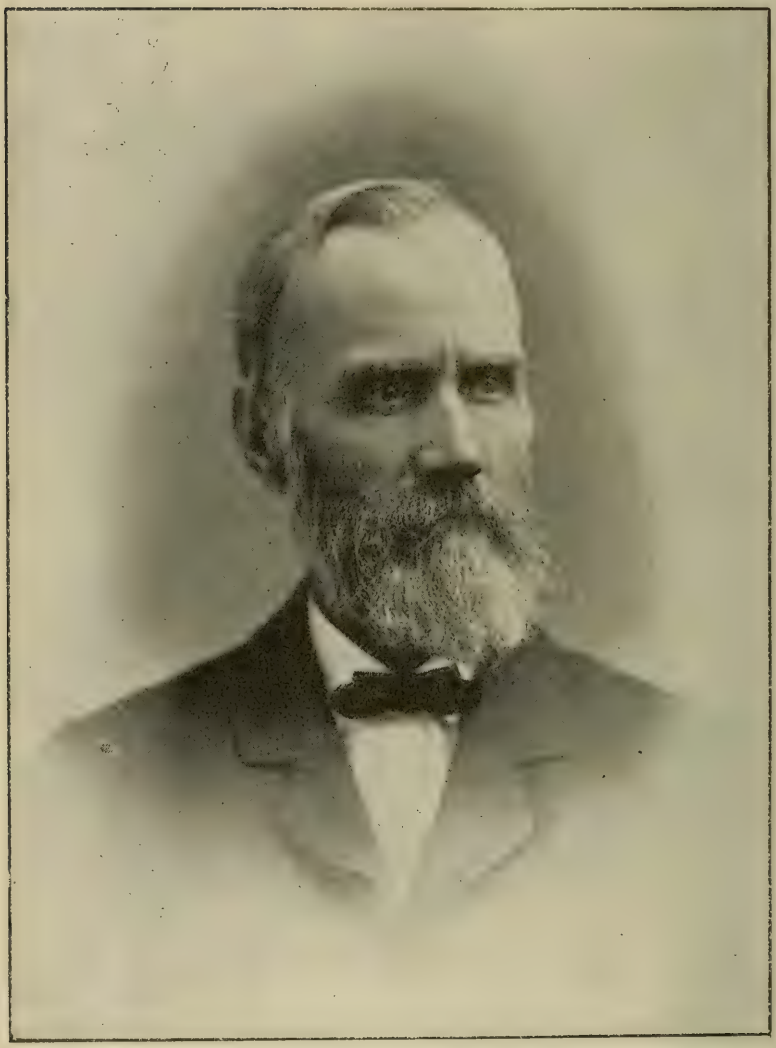
ART. 7. *Quorum.* Ten members shall constitute a quorum at any meeting of the society.

ART. 8. *Amendments.* Amendments to the constitution may be enacted by a two-thirds vote of the members present and voting at any annual winter meeting.

In Memoriam.

R. J. MENDENHALL,

MINNEAPOLIS, MINN.



Richard J. Mendenhall, one of the oldest residents of Min-

neapolis, died at 8 a. m., Oct. 19, 1906, at his home, 1714 Stevens avenue, aged 78 years.

Mr. Mendenhall came to Minneapolis fifty years ago last April, and since that time had been prominently identified with nearly every important movement for the benefit of the city, especially in its early history.

The ancestors of the Mendenhall family emigrated from England with William Penn and lived for many years in Philadelphia. Richard Mendenhall, Mr. Mendenhall's father, was an extensive tanner at Jamestown, N. C., and his mother was a descendant of an old Welsh family which settled in America at an early period.

Richard J. Mendenhall was born in Jamestown, N. C., Nov. 25th, 1828. While a boy he acquired a familiarity with farm life and took special delight in the culture of flowers and fruit. The greenhouses with which Mr. Mendenhall afterwards built up such an extensive business were first erected to gratify his love for flowers.

After leaving school Mr. Mendenhall engaged in railroad work in Ohio and North Carolina, and his experience in this profession led him to come west. After a year of surveying in Iowa, he came to Minneapolis, when twenty-eight years old. A New England friend, Cyrus Beede, followed a year later, and they became associated in the land, loaning and banking business, under the firm name of Beede & Mendenhall.

In November, 1862, Mr. Mendenhall became president of the State Bank of Minnesota. This was afterwards merged into the State National Bank of Minnesota, of which Mr. Mendenhall also became president, continuing in this position until 1871. He was also president of the State Savings Association, which was forced to suspend in the panic of 1873. At much personal sacrifice Mr. Mendenhall satisfied nearly all the claims growing out of this failure.

In 1862 he was town treasurer and for several years secretary and treasurer of the board of education.

Mr. Mendenhall was married in 1858 to Miss Abby G. Swift, a daughter of Captain Silas Swift, of West Falmouth, Mass. Mrs. Mendenhall died six years ago.

True to his bringing up, Mr. Mendenhall had always been a regular attendant of the Friends' Church and Sunday School, and was one of the founders of the First Friends' Church, which was organized in the city in the early sixties. During the early days of the Friends' mission work among the Indians, Mr. and Mrs. Mendenhall established a mission and supported it for several years.

Both Mr. Mendenhall and his wife were interested in all the philanthropic work in the city.

For many years Mr. Mendenhall was the leading florist in the northwest and until advancing years and failing health made it necessary for him to relinquish his large business cares to others. Commencing with a little lean-to of glass for his personal pleasure, more than thirty years ago, he soon added to this, till his greenhouses covered nearly a whole city block and his business connected therewith embraced the whole northwest.

Though not a charter member of this society, Mr. Mendenhall early allied himself with the organization, his name appearing on the membership roll first in the year 1871 and continuing thereon as an annual member until ten years later, when in consideration of his distinguished services to the association he was made an honorary life member. During that period and for a number of years thereafter he was one of the most regular in service and most efficient members of the society. In 1871 he was elected president, succeeding himself in that office the following year. In 1884 his name appears as a member of the executive board, and for a number of years Mr. Mendenhall was the official entomologist of the society, the science of entomology being one in which he took a large interest. Though for the past twenty years Mr. Mendenhall had been very irregular in his attendance at the meetings of our organization, he had always stood ready to render any assistance within his power to aid the society in its work, and we have counted upon his steady loyalty in every emergency. The following words which he noted in his last annual report to the secretary, which life members make in keeping in touch with the society, indicates that his interest continued unabated to the end, this being written in November, 1905. "I bespeak continued prosperity for the horticultural society. A nobler band was never organized, and I am so glad to know that the society is forging to the front. I revere the names of those who have gone before and are now reaping golden apples from silver trees." The portrait of Mr. Mendenhall used herewith is the same one which appeared in our periodical some years since, but it shows him at the time of life when he was doing his largest service for the organization through active work. An examination of the records of the society for the twenty years or more especially referred to herein will show that he was a large contributor to its literature, mainly along the lines of his favorite study, entomology.

Secretary's Corner.

Present Membership.—At this date, Feb. 23d, the annual membership roll for 1907 stands at 1463, which is 282 more than last year at the same date. Would you not like to help along the good work with at least *one* new member?

Enter the Seedling Apple Contest.—Which you can do by sending 10 cents to Sec'y Latham for a package of Wealthy apple seed (from the orchard of J. A. Howard, of Hammond, Minn.), growing seedlings from them this spring and making the necessary entry. See supplement with the February number. This will also enable you to become a member of the Plant Breeders' Auxiliary without additional expense.

Kandiyohi County Horticultural Society.—This prosperous auxiliary society held its annual meeting Jan. 23rd, twenty members being present, which is a very good attendance considering the total membership is thirty-three. An interesting program occupied the session. The following officers were elected for the ensuing year: pres., P. H. Frye; vice-pres., John Ahlstrom; sec'y and treas., C. C. Selvig. Mr. Selvig was the delegate of this auxiliary at our late annual meeting.

David P. Delamater Passes.—D. P. Delamater, who for the last thirteen years has made his home in Edina, in this county, died Feb. 17th, at the advanced age of seventy-eight years. He was one of the oldest residents of Hennepin county, having come here in 1857. For a good many years Mr. Delamater has been a member of the Horticultural Society. Though not prominent in its meetings, still often in attendance and one of the most faithful and loyal supporters of the society. A lover of horticulture and a practical worker therein.

Two New Auxiliary Societies.—The Minnesota Rose Society and the Minnesota State Bee Keepers Society have both become connected with the State Horticultural Society as auxiliaries—the former with a membership of forty-five, and the latter a membership of thirty. Mrs. H. B. Tillotson, of Minneapolis, is president; and Mrs. F. H. Gibbs, of St. Anthony Park, is secretary of the Minnesota Rose Society. Dr. L. D. Leonard, of Minneapolis, is president; and Chas. D. Blaker, of Minneapolis, is secretary of the Minnesota State Bee Keepers Society.

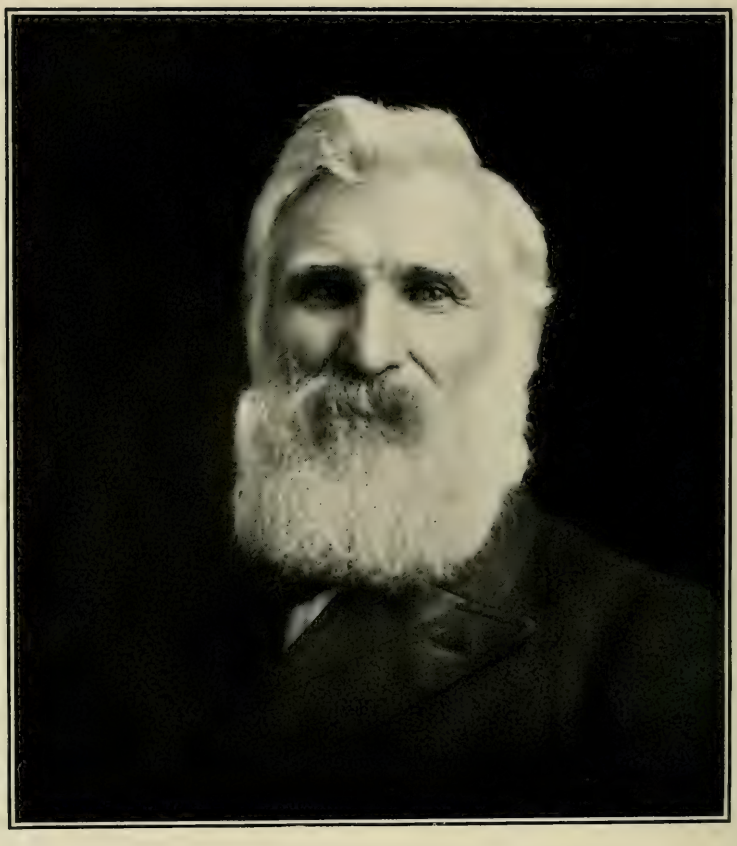
Apple Seedlings for Plant Premiums.—The apple seedlings offered by this society as plant premiums this year, No. 9 in the list of plant premiums, are grown from seed of the Malinda from the orchard of S. H. Kenney, Waterville, Minn. Those of our members who have selected this premium and wish to enter these trees for the prizes offered by the society can do so after the trees are once growing on their places. Upon application to the secretary, one or more entry blanks can be secured, similar to those sent out as a supplement in the February number. We hope that a large number of members will select this premium this spring and compete for the prizes offered. Seed of the Wealthy apple grown at Hammond, Minn., suitable for planting for this prize contest, can be had of the secretary at ten cents per packet. This seed comes from choice apples, grown in one of the best orchards in the state, and should give some good seedling varieties. Plant premiums must be selected before April 1st.

HONOR ROLL FOR FEBRUARY.—The following members have sent in new memberships to the society since Jan. 27th and prior to Feby. 25th:

L. B. Arnold, Duluth	1	John Nelson, Kerkhoven	1
J. E. Stryker, St. Paul	1	E. J. Fobes, Minneapolis	1
John Bisbee, Madelia	28	T. A. Hoverstad, Dennison	1
F. B. Millard, Willow River	1	J. H. Swanson, St. James	2
P. F. Tassie, Minneapolis	1	F. M. Crosby, Hastings	1
R. A. Schutz, Farmers' Institute	107	R. D. Wilson, Winnipeg	2
Leonard Fritze, Claremont	1	Anton Karels, Waconia	1
E. J. Dickman, West St. Paul	2	Geo. H. Brown, Detroit	1
R. A. Van Nest, Windom	1	E. J. Lovold, Minneapolis	1
E. Bonde, Cottonwood	6	S. Sorenson, Buena Vista	1
Leroy Cady, St. Anthony Park	1	Even Erickson, Fountain	1
P. Setzer, Blooming Prairie	1	J. A. Keith, Bayfield, Wis	1
J. I. Nicol, Sask	3	V. A. Neil, Minneapolis	1
W. S. Higbie, Washburn	1	Geo. W. Strand, Taylors Falls	1
B. E. St. John, Fairmount	1	H. P. Torgerson, Astoria, S. D.	3
S. R. Mighton, Winnipeg	1	J. E. Scherer, Canby	1
A. Brackett, Farmers' Institute	67	W. F. Warren, Woodstock	1
I. C. Lindley, Amboy	1	W. J. Graham, Walhalla, N. D.	1
H. M. Rendahl, Cottonwood	3	Jewell Nursery Co., Lake City	1

THE GOULD CRAB AS A HARDY STOCK.—Mr. Seth H. Kenney, of Waterville, Minn., writes that he is making preparations to continue his experiments with this crab as a stock upon which to graft half hardy varieties, and fruit growers of the northwest are all interested to know what is being done further in this matter. Mr. Kenney notes three experiments of which he speaks: First, grafting on the Gould crab some twenty-six years ago a variety from Utah, the original tree killing out the first winter, the graft coming into bearing and continuing a success. The second experiment of grafting on this stock was thirteen years ago with Thompson's Seedling, which was also a success. The third is one which he has spoken of before, grafting onto the Gould crab the Missing Link, a variety of which he had a good many trees, but too tender to survive a winter of ordinary severity. Top-worked on the crab, however, it is proving a success and apparently entirely hardy. We shall watch the results of further experiments along this line with interest.

ABOUT THE FRUIT BREEDING FARM BILL.—The bill providing for the purchase of a tract of land for a fruit breeding farm and its maintenance, exactly as it appears on page sixty-three of the February Horticulturist, was introduced early in the session in both houses of the Minnesota Legislature. At the time of this writing the bill in the senate has passed the committee on agriculture, being unanimously recommended by that committee for passage, and in the house it was similarly unanimously recommended for passage by the university committee—and in the case of both houses, we understand, is now in the hands of the two appropriation committees. As far as we have heard nothing unfavorable to the bill has developed, and there seems to be a general willingness on the part of the members of the legislature to make it a law. It has yet, however, to run the gauntlet of the sub-appropriation committee, where it must be considered with a large number of other measures, all together calling probably for several times the amount of money available. Members of the society who have not already communicated with the members of the legislature from their districts are urgently requested to do so promptly upon reading this item. The legislators like to know what their constituents want, and if this measure is one of the things that *you* want do not fail to let it be known. This is a very important duty and should not be overlooked. Please note again a letter sent you by the secretary under date of Feb. 8th, bearing on this subject.



FRANK YAHNKE,
Late of Winona, Minn.
(See opposite page.)

THE MINNESOTA
HORTICULTURIST.

VOL. 35. APRIL, 1907. No. 4.

In Memoriam.

FRANK YAHNKE,

WINONA, MINN.

Died Feb. 26, 1907, Aged 59 Years.

Mr. Frank Yahnke was born Nov. 2, 1847, in Wintersfelds, Prussia. He was well known among the agriculturists, and especially among the sugar beet growers, in West Prussia, who wrote to him when he was in Winona to come back to their country and take the lead in one of their main farms.

He went to the public schools until he was fourteen years of age, when he had to help his father on the farm. In the evenings he and six of his schoolmates studied further under their old teacher until they were eighteen years of age. Then he was asked to take a place as inspector of a large farm. After a few years he took examination for a teacher and taught school for a year, but had to give it up on account of his health.

Then he was offered a position as superintendent of a starch factory and a farm of 2,500 acres under cultivation, where there were mostly potatoes for the starch factory and sugar beets for the sugar factory raised. He took this position and, young as he was, soon became the leader of the sugar beet growers.

In April, 1870, he emigrated to America, settling down first in Milton, Wis., where he was employed by Mr. J. C. Plumb, the nurseryman, for three years—and it was through Mr. Plumb's willingness to advise, instruct and help others that he learned the principles and practice of horticulture. Mr. Plumb not only was his teacher in horticulture but also his model of character. Later on, being inspired with the desire to see more of the world, he traveled for Mr. Plumb, selling nursery stock for him. In the meantime, he rented a piece of land near Milton and started

a nursery, but in the winter of 1873 and 1874 most all of his trees were killed, which left him practically penniless. Being very much discouraged, he left Milton and went to Winona, a place he had seen on his travels, and liking it well came and settled here on seven acres of land and immediately set to work raising vegetables and small fruits and planting an orchard.

The apple trees which were not killed in his nursery he had shipped here and with them started a large orchard, planting mostly Utter's Red, Wealthy, Ben Davis, Fameuse, Transcendent and Orange crab.

In the meantime, while the orchard was growing, he made his living with small fruits and vegetables. He also had a large vineyard which was a good source of income in the earlier days, when fruit of any kind sold at a good price. In this way he managed to clear his farm from debt. Desiring to own more land, he bought sixteen acres more and later on bought eighty acres. This left him again very heavily in debt. In the summer of 1884 he received the first returns from his orchard. The trees bore very large crops, and as apples in those days were considered a luxury his returns were large. This was very encouraging, and he decided that fall to plant the entire farm in orchards the following spring. But that fall was very dry, and the trees bearing heavily, followed by a cold winter, resulted in the killing of nearly the entire orchard. This, of course, was a great disappointment, and he often said that the hardest work that he ever did in his life was to grub out those apple trees. A few Ben Davis trees which were too hard to grub out he cut off above the ground. The trees sprouted and have been growing and bearing fruit ever since. He often said if he had treated the others likewise he would have been well repaid for his negligence. After this misfortune he immediately set to work plowing up the land, first planting it with vegetables for some years and then later into small fruits and orchards again, in the meantime making his living out of the hotbeds, early and late vegetables and small fruits. This shows just what he was made of. He was not very easily discouraged. This misfortune would have discouraged a great many.

With careful planning and economy he managed to clear his farm from debt and build a better house and barn. He always cared a good deal for the protection of his family and also his stock. He has planted a beautiful and effective evergreen windbreak on the west side of his house, which will long stand as a memorial.

After the disastrous winter of 1884 and 1885 eastern and

southern nurserymen were pouring their agents into this vicinity with their elaborate plate books and winning schemes, and a great many farmers were swindled. Seeing how things were running and being swindled to a little extent himself—although cautious not to go into anything very heavily, for, as he said, a few dollars were sufficient to experiment with and it was worth that much to find out the agent and the nursery—he desired, if he could, to put a stop to this, at least in his own county. So he started again in the nursery business about fifteen years ago, raising his own trees and for others in the neighboring county, and had been gradually enlarging the business until his death.

Six years ago he secured scions of sixty different varieties, and when the trees were three years old he planted two of a kind in an orchard for experimental work. He has been experimenting a great deal with new varieties of fruits and originating new varieties of apples. Longing for the delicious cherries and plums of the old country he resolved to try some varieties. In the spring of 1893 he purchased of Prof. Budd twenty cherry trees of six varieties and ten plum trees of four varieties. This, of course, was nearly a failure. Out of the entire order only two plum trees proved to be valuable. They were two Wyant plums. Some of the cherry trees are dead, and those which are still alive have never borne a crop of cherries. Later seeing the superiority of a cherry which was attracting considerable attention around Homer, Minn.—later named after the place—he planted an orchard of 100 trees and two years later 100 more, and has been planting more right along until he had at the time of his death an orchard of 250 Homer cherry trees in bearing and a little orchard which will commence to bear in a few years. This was a good investment, and his returns from it were very encouraging.

He had been experimenting a great deal with different varieites of plums, in which he was also very successful in getting an orchard into bearing and on a paying basis.

For many years he had been clearing land on the north side of a hill and planting it into apple trees. He had been planting apple trees every spring, until at present there is a young orchard of 1,000 trees started. Those first planted have been bearing for a year or two.

All through his life he was an active church worker. In 1890 he established a Mission Sunday School for poor children whose parents depended on him as a leader of their children. This was rather a hard task, as he had no place to keep a Sunday School, nor had he any supplies whatever. The first Sunday he kept Sun-

day School in an old vacated Scandinavian church, but did not find that suitable. Before the second Sunday the Seven Day Advent church was offered to him. He opened Sunday School there with only thirteen children and four teachers. By Christmas he had an enrollment of sixty. After he had kept Sunday School in this place for three years the officers of the church refused to rent it to him any longer for the reason that he taught a different doctrine from theirs, and they did not want two doctrines taught in their church. This placed him in a very difficult position, for it was mid-winter, and he had no place to go to. He began to fear that he would have to close up, but just then he found a room in a private house. The room was so small that a great many of the children had to stand up. He soon began to see that if the Sunday School should exist any longer, it was a necessity to have a building of his own, but was little aware of the hard task it would be to collect the money necessary to erect the building. The session of the English Presbyterian Church gave him the privilege to collect the money with which to build the Sunday School, but as soon as he had started to build and collect money the pastor of the German Presbyterian Church objected to the work on the ground that he only had the right to do mission work among the German people. This did not hinder his building, but it stopped the collection of money from any source. This put him in a serious position. There were bills due on the building amounting to $225 besides the insurance, rent of the lot, and only $75.00 collected. He did not ask anyone for help but paid the above mentioned bills with his own money. It was his firm belief that if the Lord wanted the work to be carried on by him he would provide for it, and he did. It was his last wish that the work might go on and flourish and be a blessing after he had passed away.

Nov. 27, 1875, he was happily married to Miss Anna Krueger, of Horicon, Wis., who survives him, as do also his son, Walter A. Yahnke, and four daughters, Mrs. Albert Martin, Celeste H., Modesta A., and Myrtle E. Yahnke; also two brothers and one sister.

His death occurred at 8:15, Tuesday evening, Feb. 26, 1907. He had been in poor health since the preceding May, during which time he underwent two operations, which did not remove the cause of his sickness. As a last resort to save his life, another operation was undertaken Feb. 22d, in which the doctors discovered he had a cancer.

The foregoing brief notes of the life of our departed friend indicate strongly the peculiarities of his character—a forceful,

earnest, kind-hearted and helpful man of undaunted courage and perseverance that carried him over all obstacles. Aside from the phases of his life touched upon therein, there is to be spoken of the active and efficient service that he rendered to the public of his adopted state through his connection with the State Horticultural Society and the Farmers Institute. Mr. Yahnke was not a person to put himself forward but was ever ready for any useful service when called upon. It was by accident almost that the writer came to know Mr. Yahnke personally as a worker. In a circular letter to which he had replied, it was noted that he had had experience in growing currants, and as that was a subject which at that time we wanted presented at the annual meeting we wrote to Mr. Yahnke, without a personal knowledge of him, asking if he would prepare such a paper. He readily acquiesced, as was always his wont when asked to help in any way, and the result was his first appearance at the meeting of the Horticultural Society in Dec., 1898. From that time until the date of his death Mr. Yahnke was one of the most useful and popular members of the Horticultural Society. The year following, 1899, he went as a delegate of this society to the annual meeting of the Wisconsin Society, taking part in the memorial services for the late J. C. Plumb, who is spoken of earlier in this sketch. Those who heard him gave him high honor for the very touching and faithful way in which he portrayed the character and the life of his departed friend. In 1903, at the earnest request of the officers of this society, Mr. Yahnke commenced his notable work with the Farmers Institute, lecturing throughout the state with the institute corps for three years. This work brought him in touch with immense numbers of the citizens of the state, who remember him for his earnest and kindly words and the uniformly pleasing way in which he presented his subject. Mr. Yahnke was not able to go out with the institute corps the past winter.

The writer met him the last time at the late state fair, when he was in a sense already stricken with the disease which finally resulted in his death. We hoped at that time that he would be up again to take up the winter's work with the institute, but it was to be otherwise, and Mr. Yahnke's work with the society and upon the platform was at an end. We are saddened to say the parting words to so useful a man, so loyal and true a friend. The Horticultural Society honored him by making him a member of the Executive Board in 1904, probably the only person elected to this board whose previous connection with the society was of so brief a period. He still occupied this position at the time of his death, having been re-elected at the last annual meeting—and at the same meeting, by a unanimous vote of the society, he was made an honorary life member. No member of our association has a more enviable record than this dear departed one.

Vice-Presidents' Reports.

ANNUAL REPORT, 1906, VICE-PRESIDENT, FIRST CONGRESSIONAL DISTRICT.

M. R. CASHMAN, OWATONNA.

The fruit crop in our district varied so much according to locality and condition that it is difficult to make a very accurate report, and one that will just exactly apply to every locality. This has been an off year with most varieties of apples. This was true more especially with the older trees. The younger trees in many places bore quite heavily. With us the Wealthy and Patten's Greening bore about a two-thirds crop of very nicely formed and clean apples. The Anisim bore quite heavily, and the apples were above the average size and of fine quality. This variety is fast coming to the front, and the demand for it is greater every year. Other varieties of apples bore from no crop at all to one-half a crop, although in some sections reports have been received of a good all-round crop of fruit.

Apples did not keep very well this year on account of the late, warm fall. Some who have good root cellars report that their Wealthys are keeping well.

Plums as a rule were a very light crop, but in our orchard every variety bore so heavily the trees were strained under the load. We sprayed all our trees, both apple and plum, and that may account for the healthy condition of the foliage and fruit.

Cherries in our section were not much of a crop, with the exception of the Compass, which as usual bore extremely heavily.

Grapes were a fair crop, but not many grapes are raised in our section.

Blackberries were immense. This was a blackberry year, and mostly every one reports a large yield.

Raspberries about a half crop. Raspberries suffered much from the previous winter, and this accounts for the light yield. Fruit was good, what there was of it.

Strawberries exceeded most expectations, for early in the spring most beds looked as though they would be doing well to show up a few live plants; however, they recuperated surprisingly, and wherever the stand of plants was good the yield was heavy. The berries in most cases were not so large as usual, which was probably occasioned by the weakened condition of the plants.

Very little spraying is being done by the farmers, but wherever it is practiced it gives good results. I believe that fully one-third of our fruit crop is lost every year through neglecting to spray the trees.

Trees suffered very little from blight the past season and made a good growth of wood, which although it grew late has ripened up well and is in good condition for winter quarters. There is plenty of moisture in the soil, and if the present winter is not too severe, our trees will come out in excellent condition in the spring.

Southern Minnesota has demonstrated that it can raise apples and the very best quality of apples at that. What we want to do is to educate the planter along the lines of how to produce the best results by spraying, pruning and mulching. I predict that in twenty years from now apple culture will be the foremost industry of our district.

Two Minute Talk.

Mr. M. R. Cashman. In our section of the country we think we are in a fruit district, and our main effort is directed toward convincing the farmers that they are in a fruit district. Those who plant fruit trees of most of the varieties that are recommended by our horticultural society find that with a little care and attention they can raise fruit. Most varieties of apples bore very little; however, the younger trees that have been set in the last five or six years have done well. At our county fairs we had exhibits of perhaps from forty to sixty varieties of apples, and nicer specimens I have very seldom seen. In our orchard we had a fair crop of apples. We sprayed the trees three times. Plums in some places bore fairly well, although the plum crop was very light in the first district, on account of the late frost last spring. The Compass cherry in our orchard bore very heavily, in fact we had to prop up the limbs by putting frames around the trees to keep them from breaking to pieces. We sprayed the Compass cherry, and we were not bothered with worms. The trees are good and strong, and the fruit was fine. Blackberries were excellent all over the district. Even wild blackberries bore an abundance, and hundreds of quarts were brought to town. One point I would like to bring before you—and it is something that is becoming more and more important every year—and that is in regard to spraying. It becomes necessary to spray our trees in order to get good, clean fruit and good results, and if we want a tree to bear a profitable crop we must spray that tree. In raising grain of any kind, we must do certain things in order to give each particular product a chance to produce, and this is what we have got to do with our fruit trees, spray them, and spray them perhaps two or three times during the season, and also mulch them.

Mr. Brackett: Were the King raspberries hurt by the winter?

Mr. Cashman: Well, we had only a small patch of King raspberries, and they seemed to be injured somewhat, but whether they were injured by the winter I am not sure.

The President: The King raspberries are doing very well in our district.

Mr. Brackett: It is about the best we have.

ANNUAL REPORT, 1906, VICE-PRESIDENT, SECOND CONGRESSIONAL DISTRICT.

C. E. OLDER, LUVERNE.

In making my annual report of the conditions of the fruit industry in the Second Cong. District, I have taken advantage of the conveniences and the helpful system furnished by our secretary. I sent out about thirty letters to different sections of our district and received answers to nearly all of them, except in the northern

Colorado Blue Spruce on Lawn of C. E. Older.

section, where for some reason a blunder was made in mailing the letters and was not discovered until too late to rectify it. I wish here to thank very heartily all those who answered my letters for their promptness in so doing.

Question.—What is the present condition of the following fruits in your vicinity and the kind of crop borne this year (1906) by each tree?

Apples. Balaton: Condition good, but small crop this year.

Slayton: Off-year for crop, but the present conditions first-class.

Worthington: Was a light crop following a very heavy one in 1905. Present conditions good.

Lynd: O. K. In good form.

Lake Crystal: Very few apples. Trees in fine condition. Wood well ripened and plenty of moisture.

Winnebago City: Some few trees bore well, but mostly a light crop. Trees in good condition for winter.

Jeffers: Crop light, one-eighth of a crop. Condition of trees good.

Woodstock: Condition good, small crop this year.

Minneota: Medium crop, condition of trees excellent.

Fairmont: About one-fourth crop. Prospect good for a big crop next year.

Adrian: Wealthy, Duchess, Patten's Greenings, Hibernal and Whitney No. 20 bore a good crop. Condition of trees excellent.

Magnolia: Crop pretty good, Duchess, Wealthy, Snow, Northwestern Greening, Patten's Greening, Hibernal, Perry Russet, Yellow Transparent and some crabs bore a heavy crop, others light. Condition of trees good.

Luverne: Crop very uneven. Some trees loaded, others had very few or none on. Some orchards were loaded all they would hold, others had scarcely any. On the whole, a medium crop. Condition of trees first-class to go into winter.

Jackson: Duchess, Wealthy and crabs generally seemed to do well, but some orchards that bore heavily in 1905 had a light crop in 1906.

Summing up, the apple crop is about medium, with the trees in excellent condition all over the district.

Plums. Balaton: Condition of trees good, crop small and poor in quality. Plum pocket bad.

Pipestone: Medium crop, condition good.

Slayton: Small crop, condition first-class.

Worthington: The best and largest yield for many years.

Lynd: Crop lost, too much rain.

Lake Crystal: Not many raised, but some trees had a good crop.

Winnebago City: Early plums rotted badly; late ones were better but not much sale for them.

Jeffers: Crop uneven; some places crop good, others near by got little.

Woodstock: Crop good. Some rotted on lower limbs.

Minneota: None grown to report on.

Fairmont: One-third crop. Trees in fine condition for winter.

Adrain: DeSoto, Forest Garden and Miner a good crop.

Luverne: Crop heavy and good, a few cracked open and some rotted, but DeSoto, Miner, Forest Garden, Wolf, Wyant and Klondyke very heavy crop; Surprise, Baker and Stoddard fair. Several very nice seedlings are showing up.

Magnolia: Crop fair, trees in nice shape.

Jackson: Good crop and good quality.

Cherries. One correspondent reports Early Richmond a good crop; all others report failure. Compass reported O. K. and doing finely.

Grapes: Very few raised in this district.

Blackberries: In the northeast section, near Crystal Lake, a heavy crop reported, but in the whole southwestern and western part they winter-kill and are not much raised, in fact, none to speak of.

Raspberries: Crop fair generally, very heavy in northeast section. Columbian killed back to the ground where not covered.

Strawberries: A good crop reported in all sections, except Jeffers, Jackson and Minneota report too much rain, and Slayton reports a failure entirely on account of rain. Cut worms injured the plants badly in the southwest section, and a very little winter-killing reported.

Gooseberries and currants reported a fair crop throughout the district. A little complaint of borer and currant worms.

Generally speaking there has been very much more nursery stock set out this year than usual and with more than the ordinary success, a much larger per cent living and making a good growth. Not much blight reported this year, only a little on Transcendent and Virginia crabs. There has nothing at all been done in the way of spraying, except Mr. Mohl, of Adrian, has used the dust spray and, he thinks, with excellent results, and C. E. Older, of Luverne, used Bordeaux mixture.

Last winter a good many trees and shrubs held their leaves on late in the season but very little damage was done from winter freezing. There was an abundance of water in the soil.

Fruit trees of all kinds are going into winter in good condition, with the wood well ripened and an abundance of water in the soil.

The list of *apples* named by all correspondents as doing best in the district are Wealthy, Duchess, P. Greening, N. W. Greening, Hibernal, Peter, Peerless, Okabena, Longfield, Tetofsky, Iowa Beauty, Malinda. One correspondent names Charlamoff and Anisim.

Crabs: Minnesota, Early Strawberry, Whitney No. 20, Virginia, Sweet Russet, Gen. Grant, with Hyslop and Transcendent in

a few locations where they do not blight too badly. The list is not a long one.

Perennial Flowers: Perennial phlox, peonies, Japan iris, German and Chinese iris, gaillardias, blue and white larkspur, bleeding heart, are some of the best known.

In *hardy ornamental shrubs,* we have syringas in several varieties, as syringa Japonica, syringa grandiflora, Chinese lilac, Japan tree and lilac vulgaris, and Persian lilac, spirea Van Houttii, spirea aurea, spirea prunifolium, flowering almond, hydrangea P. G., snowball, upright and climbing honeysuckle, and many more that are hardy and beautiful.

The trees generally planted are the varieties recommended by the society. A few seedling orchards are coming into bearing, but nothing of marked value has yet been developed.

Two Minute Talk.

Mr. C. E. Older: The general report from the district is that there has been a medium crop of apples; at some places there has been a heavy crop, at others almost a failure, on the whole a very uneven crop, with very little blight, with no effort made, with one or two exceptions, at spraying. One man, Mr. Mohl, of Adrian, sprayed with dust spray, and, he thinks, with good results. The condition of the trees this fall upon going into winter quarters is excellent—every report says first-class or excellent. There is plenty of moisture in the soil, in fact, there is a little too much moisture. The strawberry crop on the whole was about medium. Plums were about the same all over the district. At some places they were very light and others very heavy. Worthington reports the finest crop in its history.

Mr. Geo. W. Strand: I would like to ask Mr. Older what varieties of plums he considers the best for his section?

Mr. Older: Do you want me to say what I consider the best or what the correspondents name?

Mr. Strand: Well, generally.

Mr. Older: The correspondents name the Miner, Forest Garden, DeSoto and the Wolf; most of them have named these plums. One correspondent mentions the Cheney and the Compass cherry. We think the DeSoto, Wolf, Wyant and Forest Garden are the best. There are quite a number of new seedlings that have come out which are very promising, but none very large. We want a seedling to be large as well as good in quality.

Mr. Geo. J. Kellogg (Wis.): How about the Surprise?

Mr. Older: Only medium. In four years I have had one medium crop, one failure and the other two light. Trees look very well.

Mr. A. Brackett: What remedy do you use for the plum pocket?

Mr. Older: We endeavor to pick them from the trees in sacks. I say sacks, because we had whole sacks full. We spray with Bordeaux mixture. We burn the pockets. We did not have

any pockets last year, but I do not know whether that was the whole cause of it or not.

Mr. S. D. Richardson: Did you have pockets this year?

Mr. Older: Not to amount to anything. There was considerable cracking and knot on the larger varieties, like the Baker and Stoddard and Hawkeye. The Hawkeye was practically a failure.

Mr. Kellogg: Did you spray before the buds started?

Mr. Older: Yes, the first time I sprayed just before the buds started.

Mr. Kellogg: With blue vitrol only?

Mr. Older: I use lime all the time; I use the regular formula.

Mr. J. C. Hawkins: Is the Miner hardy in your section?

Mr. Older: Yes, it is all right.

Mr. Prosser: Don't you think it would be just as well to spray earlier without the lime?

Mr. Older: I think it would be better, although it burns the leaves badly. I am often asked about cherries, but in the reports there is only one man who says he raises cherries as a crop. He is very favorably located on high land with a river running along at the base. He reports a good crop, and he prefers the Wragg to the Early Richmond or the Ostheim. I know some people will not agree with me in this, but through our district they report the Compass cherry all right. That is a dry weather tree, it is a native of a dry country, and our district is near the edge of South Dakota, and it is certainly doing well in our part of the country, whereas right here I think it is low in quality and too much subject to rot.

Mr. Hawkins: Does it do as well on older trees as it does on the younger?

Mr. Older: I have no very old trees, but my trees bore a very good crop.

Mr. C. S. Harrison: How does the Early Richmond do?

Mr. Older: Once in a while we get a good crop.

Mr. Harrison: Ever try grafting on the native plum?

Mr. Older: I have to some extent. It gives it hardiness, I think.

Mr. Harrison: I think it would have the same effect as top-working on apple trees.

Mr. S. D. Richardson: We can raise late cherries by raising Russian mulberries.

Mr. Older: Plant enough cherries for the birds too.

Mr. Richardson: If I had an orchard of 160 acres I might have a few cherries left.

Mr. Older: We use the buffalo berry for that purpose largely.

Mr. Hawkins: What time do you graft your plums, Mr. Harrison?

Mr. Harrison: Early in the spring.

ANNUAL REPORT, 1906, VICE-PRESIDENT, THIRD CONGRESSIONAL DISTRICT

H. J. BALDWIN, NORTHFIELD.

Twenty letters were sent out to different points in the district enclosing a list of questions to be answered relative to condition of crops, present condition of trees, small fruits and nursery stock. I shall endeavor to give some general conditions in some of the special reports sent in.

Twelve different parties responded. The apple crop run all the way from a full failure to a good crop. S. H. Kenney, of Waterville, says the blight of the past year had reduced the sap supply,

Iowa Beauty Apple Trees on Place of C. P. Nichols, Northfield.

so apple crop was light. S. D. Payne reports a half crop at Kasota, with good quality. One-fourth crop at Faribault. Shakopee also reports one-fourth crop. Greenleaf reports a very light crop of crabs especially. S. F. Featherstone speaks of apple crop as light, but Duchess very good quality, with Wealthy small and poor quality.

Northfield had about an average crop with a good lot of Wealthy and quite a quantity to ship west. Jordan reports Wealthy, Peerless, Strawberry and Minnesota as good, and all others light. New Ulm had very little fruit. Duchess was the only apple that bore well at Blue Earth. Hutchinson had a light crop.

All report trees in fine condition, having made a good growth, ripened wood well and but little blight. Nothing is being done for blight, and very little spraying has been done for anything in the district.

A Thrifty Longfield Apple Tree on Grounds of C. P. Nichols, Northfield.

The plum crop was about as varied as the apple crop. Too much rain made some rot. Wolf and Rollingstone seemed to be best and the most free from rot.

Greenleaf reports they suffered from scab and leaf-blight. Kasota had a good crop and good quality. On the whole, trees are in good shape.

The crop does not seem to be as easy to dispose of as it used to be before the days when all kinds of other fruits and plums were shipped in so abundantly. A good native plum well cared for seems to give about as good results or better than many kinds with big sounding names.

The cherry crop amounted to almost nothing with but few trees

in the district. One party reported a good crop of Compass.

Grapes were good at Waterville. It is surprising how few vines there are growing. The crop does not seem to pay in a commercial way, or more would grow them,—but what looks nicer than a full vine in your own yard?

Blackberries, while not largely planted, did well and surprised us all, for they did what they seldom ever do, lived over in most all places even without any covering, while red raspberries killed badly in the same place. Who can account for this? Synder seems best, with Ancient Briton next. More ought to be planted, but let none think because they lived over once without covering that they will do it again, for they won't once in ten years.

Blue Earth, New Ulm, Jordan, Faribault and Northfield all report good crops of raspberries, while others report rust, some failure and small crops. Turner, Loudon and King for reds, and Older for black, have done well with many, very hardy and good quality.

The strawberry crop varies about the same as the raspberry crop. Too wet, many report; also early frost killed many blossoms. Some report rust, but beds in the main look well this fall.

Not a large planting of nursery stock reported, but a good season has given good growth and fine prospects for future crops.

The past winter was easy on trees, most of which came through without much damage.

Here is a good report as to varieties to plant. It came from Hutchinson. Apples: Duchess, Wealthy, Peerless, P. Greening, N. W. Greening, Red Anis, Hibernal, Okabena and Longfield.

Plums: Surprise, Weaver, F. Garden, DeSoto and Rollingstone.

Grapes: Moore's Early, Agawam, Worden, Concord, Janesville.

Raspberries: King, Cumberland and Loudon.

Strawberries: Warfield, Sen. Dunlap, Sample, Bederwood.

Hardy shrubs and flowers: Hydrangea, spirea Van Houttii, phlox (perennial) and poenies, snowball, lilac and syringa.

Fighting Crab Grass with White Clover.—Crab grass is like the dog in the manger; it kills out every other stem of green grass and then turns brown itself. It makes a coarse and ugly cover in the lawn, and the individual who attempts to eradicate it by digging and cultivation may be entirely without a lawn for two or three years. If anything can get the best of crab grass in a fair contest it is white clover. In a number of lawns in Washington and elsewhere white clover has furnished the means for a final victory over crab grass, and I have observed the same process in my lawn. The white clover gradually invades the area of crab grass, replacing the latter with a close, dark green carpet.—Country Life in America.

ANNUAL REPORT, 1906, VICE-PRESIDENT, FOURTH CONGRESSIONAL DISTRICT.

C. C. DIKE, WHITE BEAR.

My report by reason of not being able to do much personal visiting will be more local than general and confined principally to Washington county. Planting of fruit trees seems to have been quite general in the western half of the country, and the beautifying of home grounds received a large share of attention. One man reported very large general sales of trees and shrubs.

Within a mile of my home there is an orchard of about 4,000 trees, mostly apples, planted three, two and one year ago. The first two years in cultivation, last year in grass. In 1906 the trees have made a slow growth. About twenty acres of this orchard is on a south slope. A fire from the Soo R. R., which passes along the orchard, destroyed some 400 trees this fall.

I have an orchard of about 1,000 trees, mostly plums. I hear that a man near Birch Lake has about ten acres of trees, and one of my neighbors, a mile and a half east, is thinking of planting a forty acre tract of rolling ground with Wealthy, Duchess and Patten's mostly.

The orchard and small fruit crop has been disappointing in most cases, while some, owing to local conditions, have reported a good crop.

Considerable winter-killing reported in small fruits. The conditions for the coming winter seem to be favorable in most cases.

The people seem to be giving more attention to fruit protection than ever. Whitewashing the trunks of trees, winding the base of the trunk with wire screening, to protect from mice, and mulching trees and small fruits.

Spraying has not received much attention; some are spraying. I have a dust spray machine. I cannot say whether I am satisfied or not. I mean to try it another season. It is the most economical way to spray and quick.

Nearly everything on the fruit list has been reported as doing well by some.

HORTICULTURAL SOCIETIES INTERESTED.—The later meetings of the horticultural societies throughout the United States have been noted for the large amount of attention devoted to civic improvement and kindred subjects. There is everywhere evident a disposition to discuss the improvement of home grounds in rural communities; and no publications of the American Civic Association have been in larger demand than those which deal with this subject.

ANNUAL REPORT, 1906, VICE-PRESIDENT, FIFTH CONGRESSIONAL DISTRICT.

HENRY HAGGARD, EXCELSIOR.

As the growing season of 1906 opened, it became evident that raspberry canes of the more tender varieties had suffered severely from winter-killing. The King and the Ironclad in most instances escaped without serious injury. Many fields of strawberries were badly injured, and in some cases tender varieties of grapes were damaged. But little damage to apple trees has been reported, although in some cases the leaves hung on late last fall.

Many growers attribute the killing of raspberry canes to a long warm spell in February, when the ground was bare, followed by severe freezing weather. I am inclined to think that an important factor was the unripe condition of the canes at the beginning of winter and am strengthened in this view by the fact that in my own neighborhood, fields that were well-cultivated until late in the fall, thus inducing late growth, were badly injured, while other fields of the same varieties that had been neglected and were overrun with weeds and grass, but had ceased growing early in the season, bore abundantly.

Reports from various parts of the district indicate a yield varying from one-fourth to one-half a crop of all kinds, with the exception of blackberries, which bore a medium crop.

Apples. Very few *young* trees bore. A few orchards of old trees bore some fruit, the Wealthy being the most abundant bearer in most cases. I noticed a large per cent of apples were gnarly, even where sprayed. Very frequent showers during the spraying season may have been the cause. Very little blight this year. None in many orchards.

Crabs bore a light crop, and many varieties were affected by a leaf blight or rust, causing the leaves to fall early in the season and giving the trees a sickly, ragged look. Such trees can hardly be in good condition for next year's growth.

Spraying is not universally practiced in any locality, and but little or none is done in some places. Some of my correspondents claim that only those who spray get good fruit.

Trees made a good growth and are generally in a good condition, though I have one or two reports of wood not ripe.

Plums. A few report a good crop, others a total failure, but the majority of growers had a light crop with much plum rot. Trees are in good condition.

Cherries. Not generally raised. Crop light or none. Blight

on leaves similar to that on crabs. The Compass cherry rotted badly. Some trees in good condition, but many not looking well.

Grapes. A light crop of good quality. Some vines are sickly or dead, but those not injured by the winter made a good growth.

Strawberries. Some growers report a heavy crop, but most fields were weakened by the winter and bore a light crop. I have some reports of a poor stand of this year's planting, caused by weak plants, but present conditions are generally good.

Currants and *gooseberries* were about half a crop.

Nursery stock. There has been a large amount planted with excellent results. The abundant rains have produced a good growth.

The present soil conditions are favorable for successful wintering, there being an abundance of moisture.

A request sent to a number of fruit growers in various parts of the district, to "give a short list of varieties of fruit of all kinds doing best in your locality," has been answered by lists which are largely in line with the fruit lists of this society. I select those sorts mentioned by the greatest number.

Apples: Duchess, Wealthy, Patten's Greening, University.

Plums: Surprise, DeSoto, Wolf, Forest Garden.

Strawberries: Senator Dunlap, Warfield, Bederwood.

Raspberries: King, Ironclad, Miller.

I would give the following as a list of desirable and hardy *perennial flowers*: Peonies, phlox, oriental poppies, bleeding heart, larkspur, golden glow, tiger lilies, tulips.

Hardy Ornamental Shrubs: Spirea, syringa, hydrangea, lilac, snowball, weigelia.

Mr. C. C. Hunter: I would like to ask Mr. Haggard whether the Compass cherry bears with him after it is five years old. The first two years they bear a good deal.

Mr. Haggard: That has been my experience, but still it has been rather limited. I am a fruit grower only on a small scale, and my personal observation has been confined only to a small section of country in the vicinity of Excelsior, at Lake Minnetonka. However, my observation is that trees that have borne for five years are not doing well.

Profits from Spraying Potatoes.—The results of numerous experiments made by or under the direction of the New York agricultural experiment station, shows that it pays to spray potatoes. At Geneva, the average gain during the past four years has been 148¾ bushels per acre from five to seven sprayings. In similar experiments at Riverhead, L. I., the average gain from five to seven sprayings was 69½ bushels per acre and from three sprayings 39 bushels.

ANNUAL REPORT, 1906, VICE-PRESIDENT, SIXTH CONGRESSIONAL DISTRICT.

REV. JOHN B. KATZNER, COLLEGEVILLE.

As some of the members may not be familiar with the location of the Sixth Cong. District, I will first give a general outline of its location. It extends from Carver and McLeod counties north to Lake Winnibigoshish and from Lake Mille Lacs west to the city of Wadena. Its total length from south to north is about 180 miles, its average width sixty-six, and, with Douglas county added on the west, comprises twelve counties in the central part of Minnesota.

I sent out twenty-five circulars to members of this society asking for information for this report. About one-half of the mem-

The Lawn at St. John's University, Collegeville.

bers responded, and I hereby take this opportunity to express my thanks. This report is based on the information thus obtained and my own observation. It might have been made of more practical value if each one communicated with had given me a little assistance.

In general our well-tried fruit trees came through the winter in good condition. Regarding the *apple* trees, there was no root-killing, no freezing back to amount to anything. The winter was not extremely cold, and although an off year a good crop was anticipated; but during blossoming time very cold, severe weather,

accompanied by frost in some localities, prevailed, and in consequence the apple trees set only a little fruit. This was especially the case in the northern part of the district, where apples have been few but of very good quality. In the southern part of the district, although the crop was short yet trees standing protected against the cold east winds during bloom, or in otherwise favorable locations, yielded some very good crops of Duchess, Wealthy, Patten's Greening, Hibernal, Gideon, University, Charlamoff and Peerless. As a general statement, Duchess and Wealthy have done the best, and at least for one grower brought a full crop.

Plums have been reported from half a crop to almost a failure. To the unfavorable climatic conditions insects have added their depredations. As soon as the leaves unfolded in spring, the aphis became very numerous and sucked the very life out of the tender leaves and shoots. In some orchards the plum trees appeared as if attacked by blight on the new growth; then too, after blooming, as no pruning was done, the curculio and other insects got in their work, and as a result the plums were mostly punctured and deformed, small and of poor quality. Cheney, Surprise, Stoddard, and Hawkeye in the more southern counties, seem to have done the best.

It seems *cherries* are not grown much in our district. One of the reasons may be that the varieties now planted are scarcely hardy enough. This year they were mostly worthless, and the few that did grow were not enough for the birds. Early Richmond, Ostheim, Wragg and Compass cherry proved to be the best.

Grapes have been more or less a disappointment. In the northern part of the district none or only a few are raised, and some of the growers have become discouraged and will make no further attempt to raise this fruit. In other locations more favorably situated, the crop was at best only fifty per cent. The bunches were large, but the crop was light. Beta, Concord and Janesville produced the best results.

Blackberries also were not plentiful this year. While with some the canes came out in good condition when spring opened, with others, however, they were almost completely killed. Hence some picked an average crop, whereas the crop for others was rather light or a complete failure. Why it so happened I am unable to say; it may have been due to the fact that the plants were not properly protected during the winter, or the frost in May perhaps injured them.

Raspberries in general have been a little better than blackberries. Some growers took the precaution to cover the canes late in

the fall and consequently were rewarded for their trouble with a

Patten's Greening Apple Tree Bearing a Bushel of Fruit, at St. John's University.

very good yield from some varieties, yet according to reports many

have been disappointed. The canes of many varieties, as of the Loudon, Cuthbert and Turner, were frozen and frustrated the expectations of the growers.

Although the *strawberries* were far from giving good returns, yet wherever care was taken to cover them, they have been decidedly better in general than other small fruits. It seems the thaw of February and the severe weather of March worked havoc in the strawberry beds, and later on the yield was materially reduced to one-half or one-third of a crop by frost or too much rain, but on well-drained ground the crop was very fine with some.

As the cultivated fruits have been only a partial success with most of the growers, it may also be said that even other fruits growing spontaneously in this district, as blackberries, raspberries, gooseberries, highbush cranberries, wild plums and grapes, etc., have not been as plentiful as usual, at least not in Stearns county. The cause is ascribed to the cold of May and June and to the late frost of the past spring.

Nursery stock has been planted throughout the district in general, but, as reports indicate, it was light in the southern counties but larger in the northern. I have also learned that apple trees have varied in price from ten cents to $1.25 a tree. The stock is growing very well and is very promising for future returns, "until old winter gets it," as one party humorously remarks.

I may report here to the society of the twelve apple trees, grafted on Pyrus baccata, received from the experiment station and planted in 1905. These have been cultivated during the entire season of 1905 and 1906, and most of them at present are doing well. Three of them, however, died; but one, which had the bark peeled off last winter, grew again and is now four feet high. The others grew from five to twenty-two inches last year, and this year increased eighteen inches to two and one-half feet.

Last spring I received thirteen more trees grafted on Pyrus baccata, and at present I find that these are doing well except one, which very likely will die before the coming spring. The six apple seedlings, presented by Mr. Wyman Elliot, have been carefully placed in the nursery and are doing fairly well.

Last season in this district the blight was not of any serious consequence, and it showed in the Transcendent crab and Yellow Transparent a little only. Although a number of apple trees died, I do not think it was blight that killed them. Many growers aim to give good air circulation and prevent too rapid growth of new wood by letting clover grow between the trees. Nothing else, however, is done to prevent blight, and even blight-stricken branches are not

always cut out. It is not surprising if trees in this condition are finally ruined.

In the line of spraying very little comparatively is done. Some of the largest growers do spray their trees and seem to have done so with good results, but the majority do not. Yet as the insect pest is on the increase from year to year, spraying will become a necessity.

As I have stated above, our well-tried fruit trees did not suffer from the cold of last winter. Most trees and shrubs held their leaves on very late, and although the winter was not excessively cold yet the prevailing conditions caused some damage. The latter part of February was warm, and most of the snow melted; then March came in very cold, forming an ice crust over plants and around trees, causing the bark just above ground of some varieties to peel off, and thereby killing many of the young trees and small fruit plants which were not protected by a good mulch. I have a young orchard of thirty varieties of apples planted three years ago. Of these, twelve varieties were killed as indicated, and the other eighteen varieties, standing in the same rows and enduring the same conditions, came out all right in spring. The varieties killed were: Northwestern Greening, Red Queen, Lead apple, Avista, Russian Borsdorfer, Wolf Seedling, Zolotoreff, Beechers Sweet, Little Seedling, Sweet Russet, Kaumps Seedling and Sweet Pear. The Longfield, University, Red Astrachan and Wolf River have also suffered some, and many trees unprotected have been sunscalded.

In my cherry orchard of a hundred trees I have a variety from Wisconsin—I do not know the name—that mildewed last year very badly; later on the leaves turned yellow and dropped off early in the season. This spring these trees were nearly dead. The other varieties in the same orchard did not suffer. But the greatest injury was done to the small fruit plants, as strawberries, raspberries and blackberries. Nearly all varieties suffered or were winter-killed in most locations by thawing and hard freezing toward spring, where they had not been well protected. This was one of the worst winters I remember on small fruits, shrubs and perennial plants. During the past season fruit trees and plants have made a very good growth and ripened their wood well this fall; the rainfall was abundant, and hence the future outlook is bright and promising to the horticulturist.

For a short list of varieties of all kinds of fruits, hardy perennial flowers and ornamental shrubs I select only those, which, of course, with proper care, do well through our district.

Apples: Duchess, Charlamoff, Wealthy, Patten's Greening and Hibernal.

Crabs: Virginia, Whitney, Florence, Early Strawberry and Genl. Grant.

Plums: DeSoto, Forest Garden, Surprise, Wolf and Stoddard.

Cherries: Homer, Early Richmond, Wragg, Ostheim, Compass.

Currants: North Star, Long Bunch Holland and Red Dutch.

Gooseberries: Red Jacket and Houghton.

Strawberries: Dunlap, Splendid, Bederwood, Enhance and Lovett.

Blackberries: Ancient Briton and Stone's Hardy.

Raspberries: Loudon, Cuthbert, Turner and Columbia.

Hardy perennial flowers: Peonies, phlox, larkspur, golden glow, gaillardia, pyrethrum and German iris.

Ornamental shrubs: Lilac, snowball, hydrangea gr. fl. pan., barberry, mock orange, spirea Van Houttii, and weigelia.

For a complete list of perennial flowers and ornamental shrubs that may be planted I refer to Bulletin No. 96 by Prof. S. B. Green of the Minn. Experiment Station.

I am pleased to say that the scarcity of fruit raised this year is only an exception and not the rule. Bountiful crops have been gathered in the preceding years and will doubtless be again in the coming. Horticulture has its ups and downs like any other occupation in life. No one need therefore be discouraged, but each one should rather utilize the lessons he has learned from past failures in order to guard against them in the future, since we not only learn a good lesson from successful results but a better one many a time from disappointments. The experience of this year seems to indicate particularly the necessity of protecting all and especially the small fruits against the rigorous and adverse conditions of our winters. It seems to teach us secondly the lesson of protecting our growing crop by judicious spraying, or other preventives, against the depredations of obnoxious insects.

Finally it shows us very positively the necessity of originating hardier varieties of fruits than we have at present, which can stand the climatic conditions of this and neighboring states. Much has already been accomplished, and what has been and is being done for the apple should naturally be done also for the smaller fruits. The wild types we find indigenous to the state should be taken for hardiness, and the best cultivated varieties to impart quality and size to the new originations. Since we consider this last point relative to the originating of a hardier kind of fruit plants than we have at present of paramount importance, I am hopeful that all will realize this fully, and that many in the near future may have interesting facts to present to this society, and in doing this they will find

much encouragement in the laudable efforts of Professors N. E. Hanson, of Brookings, S. Dak., S. B. Green of the Minn. Experiment Station and many others of this state and society. May the Lord of all things guide our hands and crown our efforts beyond expectations!

ANNUAL REPORT, 1906, VICE-PRESIDENT, SEVENTH CONGRESSIONAL DISTRICT.

P. G. JACOBSON, MADISON.

For the short time allowed outside of one's regular business I have endeavored to get at the facts required by the society in the seventh district. Out of the twenty-five inquiries sent out a little less than half were returned, but those filled out are from all the counties and different localities as near as may be and show an intelligent statement of facts.

Apples: Forty-five per cent report poor crop, ten per cent light, and forty-five per cent good crop. There seems to have been very little damage to trees last winter, and no blight to speak of during the summer. There are, however, two who report the loss of nearly all the plum trees.

Plums: Plums are a failure, as only one party reports good crops. This applies to tame and wild alike.

Cherries: Very few raised. No report.

Grapes: Very few reports. Generally poor crop, except Clara City reports good crop.

Blackberries and Raspberries: Generally good where properly cared for.

Strawberries, Currants and Gooseberries: Are all reported above an average crop, and all standard kinds are reported doing well.

Planting, 1906: A great deal of fruit trees and berries has been planted, but in most cases it is the quality of salesman that counts rather than kinds of fruit. No spraying reported. I have heard of one who sprayed his trees in my country and killed the fruit.

A great many report their orchards in poor condition, owing to excessive wet weather. This, however, appears to be more a condition of the land on which the planting was done than anything else.

Hardy varieties in order as reported:

Apples: Duchess, Wealthy, Patten's Greening, Hibernal.

Crabs: Whitney, Virginia, Siberian Yellow, Minnesota.
Cherries: Compass, Early Richmond.
Plums: DeSoto, Surprise, Wolf.
Flowers: Are not reported, but I am going to take the responsibility of speaking for the seventh district, and any one who is not willing to take my word will be requested to take the M. & St. L. R. R. to Madison, where the citizens grow flowers instead of weeds—and they are not the wild sunflower either!

Two Minute Talk.

Mr. P. G. Jacobson, (7th Dist.): I relied altogether on the notices sent out and jotted down a few things I thought might be of interest to you. Almost all the replies that I received relate to the personal experiences of the parties instead of the general conditions in their respective communities. It seems, however, that is the only way to get at the facts in the case.

There were quite a few reported their orchards in poor condition owing to wet weather. It has been a very wet season throughout the seventh district, so much so that a great deal of wheat and oats were not cut and corn is not yet husked. The condition of the orchards is rather due to the fact that they were planted in the dry seasons of a few years ago, and they were planted on low ground, and owing to the wet seasons we have had in recent years the condition of the soil is too wet for the trees.

Mr. A. Brackett: I would like to ask Mr. Jacobson whether he has any trouble with the Compass cherry not bearing.

Mr. Jacobson: The Compass cherry is not over three years old with us. The only man who can raise cherries in the district is Mr. J. F. Jacobson. He is the only man who can raise cherries, and he has a great number of all kinds.

Mr. Brackett: You take the Compass cherry in Dakota, and it is a continual bearer there. They never have any trouble with rotting, as we do here, and that is because of the dry climate. A dry climate is the native home of the Compass cherry.

The President: We have had some unusually bad seasons for the Compass cherry on account of so much rain. When we get another of our old-fashioned drouthy summers the Compass cherry will do better.

Mr. C. S. Harrison (Neb.): We can raise more worms from a single cherry in Nebraska than I ever saw.

Mr. Henry Husser: I had occasion to see the Compass cherry on the place of a friend in St. Paul, and he says it is the worst thing he could plant. He says they are full of worms, the trees spread apart, and the least wind will break them down.

"I Have a Wealthy Apple Tree—that brought me in $15 in clean cash the past season. Wealthy beats Ben Davis twice over as a money maker, for it is a better apple and comes in at a time when apples sell well."—Joe Parker, Sagamon Co., Ill. (O. J. Farmer.)

ANNUAL REPORT, 1906, VICE-PRESIDENT, EIGHTH CONGRESSIONAL DISTRICT.

H. G. WESTMAN, SANDSTONE.

Apples: There is quite a difference in the apple yield in different locations. The north of the district has a far better showing than the south. This goes to show that the clay soil in the north is better adapted than the sandy belt extending forty or fifty miles north from Minneapolis. Among the apples that were raised with fair returns were Duchess, Wealthy, Brier Sweet, Lyman's Prolific, Early Strawberry, N. W. Greening, Patten's Greening and a few scattering trees of different varieties.

Plums: A very few trees bore a good crop in the lake regions otherwise scant crop.

H. G. WESTMAN'S BERRY FIELD.

From this two year old strawberry bed were gathered berries that brought their owner a silver medal from the St. Louis World's Fair. Practically the only protection were the weeds. Query.—Wouldn't the bed have done better without them?

A few Concord *grapes* bore good crops, but they are limited in number.

Raspberries looked good but crop light.

Strawberries did fairly well in some places, but crop averaged light on account of poor pollination caused by excessive rains in June. The Bederwood, Warfield and Senator Dunlap seem to be in the majority.

Currants and *gooseberries* are in fine shape.

It is noticeable that very little is done in the line of spraying. Some localities report no blight, others report blight bad but nothing done to check it. In a few isolated instances, spraying has been done with fine results. I find that a good many trees in the sandy localities winter-killed, also strawberries and raspberries, even

though they were well protected. Northwestern Greening apples seem to have winter-killed more than the others.

Fruit is going into winter in fine condition. Sufficient moisture in the ground and all trees and shrubs are in good condition.

The following list of fruits and berries are now considered as doing best in this locality.

Apples: Duchess, Wealthy, Patten's Greening, Hibernal, Whitney, Early Strawberry.

Plums: DeSoto, Wolf, Wyant, Surprise, Compass, Cheney.

Currants: North Star, Victoria, Red Dutch, White Grape.

Gooseberries: Downing.

Raspberries: Loudon, Turner, Kansas, Older.

Strawberries: Dunlap, Bederwood, Warfield, Splendid and Clyde.

Perennial flowers: Phlox, peonies, bleeding heart, golden glow.

Ornamental shrubs: Snowball, lilac, spirea Van Houttii, hydrangea P. G., syringa, honeysuckle.

The territory has been overrun with eastern stock, which is poor, but Minnesota stock is doing very well.

Two Minute Talk.

Mr. H. G. Westman (8th Dist.): I am somewhat handicapped in making this report because of the fact that I was away from home most of the summer. At the meeting last winter I listened to what some of the wise fellows had to say on strawberries. I made up my mind that I had not been doing the right thing, so I plowed under my strawberries, about three acres. They did not look well. They looked rusty, they winter-killed and did not have a good appearance. There are some stumps in the field and a few plants escaped and from those I got about a hundred quarts of berries. I thought perhaps I might have done better if I had left them, but I concluded I would set out more and take care of them by up-to-date methods. The northern end of the district, the lake region, is the best suited for fruit. It seems the soil is heavier up there, and all the reports we have from the sandy sections of Isanti, Mille Lacs and Kanabec counties were not very encouraging —the strawberry winter-killed, even where well protected. There are not many apple trees planted. The Northwestern Greening is subject to winter-killing. My own experience and observation is that the Northwestern Greening grows very nicely. Not one of my trees killed back. I have three hundred trees, and not a single one killed back. I have a report from same section which says the country is absolutely no good for apples. There may be something wrong in the matter of roots, but you old fellows know more about that than we young fellows.

Mr. Brackett: Have you any wild strawberries that are profitable to grow in the garden?

Mr. Westman: We have a wild strawberry that grows an

enormous plant, but the fruit is small. We have an abundance of wild dewberries. I experimented with dewberries from New York stock and raised about a peck to the bush. I raised some two inches long and an inch in diameter.

Mr. Brackett: Do you find those dewberries perfectly hardy?

Mr. Westman: Well, yes; in a way. It is all a matter of covering. If they are covered up in the usual way with straw, they do not do well at all, but I shovel sand over them, and they keep in

Borovinca Apple Tree Loaded with Fruit. On Farm of Otto Wasserzieher, Big Lake, Aitkin Co.

fine shape. The raspberry and blackberry in the sandy district is no good at all, but we had strawberries up there as big as ordinary apples in this district. A man at Hinckley advertised that he would pay a dollar a quart for three quarts of the largest strawberries. He got three quarts containing ten, eleven and twelve berries, respectively, to the quart.

The President: Do you consider those large berries, Mr. Kellogg?

Mr. Kellogg (Wis.): Oh, yes, a fairly good size. (Laughter.)

Mr. Brackett: What variety were they?

Mr. Westman: I don't know what they were.

Mr. Kellogg: I take it from your remarks that it was a damage to you to come down to the convention last winter.

Mr. Westman: Yes, it was a damage. (Laughter). I heard a man say here last winter that he raised a hundred quarts to the square rod, and I said to myself that I was twenty-five years behind the times, but I think probably I can catch up. I am a stone cutter by trade, and I am doing this work more for recreation than anything else.

Mr. Brackett: In what condition are your strawberries now?

Mr. Westman: Most of the strawberries are covered with about ten inches of ice.

The President: That is a bad covering.

Mr. Westman: I think it is a fine covering. (Laughter.)

ANNUAL REPORT, 1906, VICE-PRESIDENT, NINTH CONGRESSIONAL DISTRICT.

OLE J. HAGEN. HENDRUM.

On the level lands of the Red River Valley the crops of small fruit were very light on account of constant heavy rains; Norman and Clay counties seem to have suffered the most. Last year, i. e. in spring of 1905, the weather was dry without any late frost, so planting of all kinds were fine, but May came in with so much rain that small fruits failed to a great extent, tho apples of all kinds bore a bumper crop, plums about half crop, currants very good.

The fall of 1905 was rainy and very wet, so the trees went into winter quarters in rather bad shape, as we did not have any frost till latter part of October, when the ground froze hard. The result was the trees improperly matured, with leaves green and many sorts froze back considerable of that year's growth. North from here the conditions presented, from the reports received, a different view, as the soil was not so full of water in the fall, but south from Norman county the trees went into winter with full foliage. One report from Otter Tail county says lost one-third of his trees. The cause apparently was the result of immatured wood, and the great change in the weather from warm to hard freezing weather was what killed them. Northwestern Greening seems to have suffered the most of all apples planted all over the Valley.

This year (1906) the spring opened wet and cold, and later freezing was reported from some parts of the Ninth Cong. District,

but where the lands were nearly covered with water they had no frost. That crops of fruits failed so entirely is attributed to the incessant rains thru the blossoming season, and as a result the pollination was imperfect. However, strawberries are reported to have been good on sandy and high lands. On lower land or level lands, Sen. Dunlap and Perfection carried off the laurels this year with a splendid crop. Imperfect varieties were entirely a failure.

Few reported names of sorts. Out of little over thirty inquiries twenty did not respond to the call, and for this reason the report is lacking in details. Many are now beginners in the field of horticulture, although some have been in it over thirty years. Apple

Residence of Ole J. Hagen, Himself and Family.

trees seem to go into the winter in far better shape this year than last year. Leaves of most sorts are off. Ground is now covered with lots of snow, soil fairly moist and no frosts in the soil. In some parts complaints are that it is too dry; in Red Lake and Becker counties on heavy clay soils it is about right.

As to blight, there are some complaints. Norman county seems to have less of it. The only remedy is cutting the blighted limbs, but it seems not to help much.

Spraying has been tried by but few, but results are in favor of spraying, and it ought to be tried by all who suffer from fungous

diseases and from insects. It should be studied what to use to advantage. The Bordeaux mixture is certainly to be recommended where rust, scab and similar diseases appear, also for plum pockets.

Insects the trees have been nearly free from all over; only one report says an unknown insect has attacked trees in Roseau county.

From Becker county to western parts of Clay and Norman counties, mice have done great damage to all sorts of fruits. They commenced to eat strawberry plants in the spring and raspberries. In first part of August they commenced to gnaw the bark from apples, plums and gooseberries. The mice are claimed by all to be a rodent new to this part of the country, and they are in great

O. J. Hagen's Orchard In Bloom at Hendrum, Red River Valley.

number and are doing great damage to small grain, especially barley, also to potatoes. From further north no mention was reported to me on this subject.

In regard to cherries: there are but few grown, but Erick Anderson, from Lake Park, reports Compass and Pennock's Hybrid a good crop, Wragg and Vladimer a few. With me last year there were some on the Ostheim and E. Richmond, but this year it was a blank. The trees were hurt some by last winter freezing back and buds hurt by cold.

Grapes there was no report on and so with blackberries. Raspberries promised a good crop but turned black in the rain—in some places a half crop. There are a number of apples doing well here. Peter is one among the leading sorts, with some Duchess, Hibernal,

Patten's Greening, Longfield. Charlamoff is doing very well; Wealthy and Borovinca are also striving for prominence. Anisim and Calville are also in the race for admittance. There are also others that will come in the near future.

Of crabs, Florence is yet being grown by but few. I have no fear but that it will be placed in the ranks as one of the most reliable sorts as to bearing qualities. Virginia comes next but blights some. Greenwood and Powers are doing well in our rich soil and don't blight. Early Strawberry is hardy and also a heavy bearer, but blights some—is worth planting, and the fruit sells well. Pride of Minneapolis is a sure and constant bearer, but its fruit don't sell well, but is one of the best late sorts and is worth planting; has not shown any sign of blight yet. Martha is worthless here and unproductive. Dartt and Orange and Whitney No. 20 grow well but have not shown up as well as the sorts first named. There are still many more that have fruited here and are promising hardy sorts, especially of Russian varieties, and some that have been heavily loaded in an off year, as last year.

As to plums the tame sorts bore a fair crop, but wild sorts gave nothing to speak of. On my place the City plum, also New Ulm, had a full crop. Odegaard blighted, and the fruit wilted and cracked. Forest Garden did especially well, free from any defects: otherwise the crop was light all over. Sorts most preferred for this part undoubtedly De Soto and Forest Garden; they are the sorts most planted and tried. Wyant, Surprise and Comfort are recommended. There are a lot of plums of the different sorts grown fruited but a short time yet.

Raspberries recommended are the Turner, Philadelphia, Loudon and Cuthbert. Of strawberries there is no preference reported, as the two last seasons have proved a failure with most sorts.

Of ornamentals there seems to be no end to varieties given me, and I wish I could write them down as reported, but some are nearly illegible. Of roses the moss rose, Harrisoni, snowball, lilac—there seems to be over fifty-four different varieties of last named sort in growth here. Spirea Van Houttii and peonies do well, and phlox with a little covering. Dahlias and gladioli, when dug in fall and placed in the cellar. Irises of different sorts do also well when covered with straw or manure. Crocuses and snowdrops do well with a little protection. Mr. Probstfield, of Moorhead, says he thinks double the number will flourish with but little care—daisies, bleeding heart, pansies, hollyhocks, red lily, tiger lily. Golden willows grow rank here and so do elders. It is a wonder to me to find so much in this line that promises so well, but as my report grows in length must curtail it. In the neighborhood of Hendrum, or the western part of Norman county, this year was planted out a whole carload of trees of all kinds, of currants, strawberries, evergreens and fruit trees—the writer is unable to give the acreage the correct figures. There seems to be a steady increase all over this district. Apple growing seems to be the most prominent of all fruits, and we hope with intelligent care success will not be blighted.

Some complain that trees and berries don't grow with them; for this there can be several reasons. In many instances very poor packing of trees, delay in transit, poor planting and the care they necessarily need after being planted. Still half dead trees are hard to get life into again with the best of nursing. There are

In the Orchard of Rev. O. A. Th. Solem, Halstad, in Red River Valley.

other hard nuts to crack, inclement weather, etc., but the hopeful generally succeed in the battle and conquer at last. The main thing is to get good stock to start with, then you will find out later the cause of failure.

Two Minute Talk.

Mr. Ole J. Hagen: Our district is in the northwestern part of Minnesota. I have quite a large district to report from, and it is difficult to get a good survey of it. I do not know much about those to whom I sent inquiries, because I have not had the opportunity to come in contact with them, and do not know from per-

sonal knowledge what work has been done. Many of them are beginners, and their reports are therefore scant. Others have been thirty years in the business, with some of whom you are no doubt acquainted. Mr. Probstfield, of Moorhead, has been engaged in this work for thirty years or more and gave me a good report. Then there are others living near Crookston, for instance, Mr. Sampson, who has been engaged in horticulture for thirty years. He has had as many as five acres of strawberries at one time, but he lived so close to the city that he abandoned strawberry growing. He stated the reason, but I do not think it necessary to mention it here. I find that most of them are new beginners, and their reports cannot be very greatly relied upon on that account. What experience we do get from planting from our district is encouraging. The trees are not blighted much and bore well, and there has been no root-killing as has been the case in some parts of the country. Whether it is because we get our trees on hardy roots, or what it is, I do not know. Most of our trees have come into bearing and had a heavy crop last year, but this year was a failure of all kinds of fruit, except some sorts of apples and plums, which bore heavily. Currants were a fair crop, although not a heavy crop, and among them the Prince Albert seems to be the best. It is a good bearer, a strong grower and has quite a large berry. It is nearly as large as any of the red currants. We have also tried the Crandall currant. I believe they are a selection of the wild currants that grow in the Missouri Valley district in Dakota. It is a very hardy currant and bears freely, but it seems to me that as it grows older the berry becomes smaller. I think the proper way to remedy that is to cut out the old wood and let only the young wood bear. It is a very nice berry and makes good pies and a fair sauce. We have also made jelly of them, and it makes a very nice jelly. I think in our district in that heavy soil it does very well.

Mr. Kellogg: Is it a black currant?

Mr. Hagen: It is rather black. It is nearly purple black. The birds like it very well, and we can hardly get it ripe enough to pick, but when nearly black it is just as good for making jelly. I have on my place nearly fourteen kinds of currants, and the Prince Albert and Cherry currants have been doing very well. I have noticed through the Minnesota reports that the Cherry currant is not hardy. I do not know how it is about that, but I am on the prairie, and they are covered with snow every winter, and I get some very nice fruit. The bush of the Crandall is not very large, but the berry is large.

H. F. Busse: Have you tried the Long Bunch Holland?

Mr. Hagen: I tried that, but it did not succeed very well. I do not know the reason, unless it started too early, or I did not get the right kind. However, I have not tried since. It froze out and had to give up the ghost. Now, I know of a man in the same county who says they do well with him. I am afraid I have not got the right kind.

NOTES ON CO-OPERATIVE FRUIT MARKETING.

PROF. S. B. GREEN, ST. ANTHONY PARK.

At the recent session of the Wisconsin State Horticultural Society, which I attended, the subject of co-operative fruit growing was under discussion, and much of interest to fruit growers generally was brought out. It was shown very plainly that a properly managed fruit association is absolutely necessary for successful marketing of fruit in many localities, that without such co-operation the growers of fruits are at the mercy of transportation companies and commission men. It was also shown how easy it was to co-operate.

Under the present conditions of society it is absolutely necessary to unite together in this way in order to accomplish anything. This does not mean that it is a case of one portion of society against the other, but simply that things are done in a better way when they organize to work together than when they go at it individually.

Among the points brought out were the following:

E. A. Richardson, Sparta, Wis., manager of the Sparta Fruit Growers' Association, made the following statement: They sold 8,000 24-pt. cases blackberries, average return $1.37; 1,600 24-pt. cases black raspberries, average return $1.49; 5,000 24-pt. cases red raspberries, average return $1.53; 16,000 16-qt. cases strawberries, average return $1.37.

The association is a mutual one. They employ a manager by the season, to whom they pay a salary of $1,000. They have a desk in the office of the American Express Co., and have recently invested $3,000 in land and buildings in Sparta, in which they will manufacture crates and boxes for their members.

They put their fruit in three grades, first, second and no grade.

J. B. Graves, Neosho, Mo., president of the Neosho Fruit Growers' Association, Neosho, Mo., states that they pay their manager two per cent of the gross sales, and he pays all the office expenses and for loading cars. This manager generally clears about $1,000.

Members of the association are restricted in some ways. For instance, a regular scale of prices is fixed for labor, and no one is allowed to pay more—if he does he will be expelled from the association. The association buys crate material, stencils, etc., makes arrangements with the banks for loans to the growers, as well as assists in other ways.

By careful arrangement they succeeded in getting nearly as fast service by freight as by express. They have found it desirable to specialize in the matter of growing strawberries and select one variety for their members to grow. This is the Aroma, which does

well in that section. One of the advantages in having only one variety is that the general appearance of the shipment, when opened, is more uniform, which is a help. Hood River made its great record for strawberry shipment on the Clark seedling.

The problem of marketable fruits is an important one, and Mr. Graves thinks it must be solved by each association in its own way, and that canning, vinegar and cider factories will naturally become a portion of the work of an organization of this kind when it has reached perfection.

The subject of allowing the Express Company to act as sales agent was fully discussed, and the experience of growers was opposed to this method of marketing except in occasional cases.

ANNUAL MEETING, 1907, WISCONSIN STATE HORTICULTURAL SOCIETY.

J. A. HOWARD, DELEGATE, HAMMOND.

On Tuesday morning, owing to the intense cold, the trains on the Milwaukee road were from three to five hours late, and your delegate did not reach Madison till Wednesday morning at ten o'clock. I went directly to Guild Hall, where I found the meeting in session, and the reception of delegates in order. Your delegate was cordially received and made an honorary member, and was also made to feel at home, as there were so many familiar faces that are seen at our Minneapolis meetings, including A. J. Philips, C. G. Patten, Geo. J. Kellogg, Prof. Hansen, Prof. S. B. Green, Roy D. Underwood and others.

The secretary's report on trial orchards showed the society spent $1,500 on them in 1906.

The society took an active part in warning the people of the state against fraudulent tree dealers, who were operating in various sections, by instructing the secretary to send notices to all the newspapers warning the public.

A report on cranberry culture in Wisconsin for the last forty years, by Mr. Bennett, showed that cranberry culture had been very unprofitable in a great many localities.

The next paper, "Strawberry Review for 1905-6, Plant Injury and Cause, Crop and Prices, and most Profitable Varieties," by M. S. Kellogg was very interesting. Mr. Kellogg thought that ice forming on plants, smothering them, was one of the chief causes of winter-killing. Crop was light and prices good, and the Sen. Dunlap was one of the best varieties for the commercial grower. Nearly every grower reported more or less injury.

The papers were so long and program so full it gave very little time for discussion.

The first on the program for Wednesday afternoon was "The Cost of Production in Fruit Growing," by Prof. S. W. Fletcher, Michigan Agricultural College. He corresponded with growers in different states to find the cost of producing a bushel of apples, peaches and pears in their localities. There was quite a difference in opinions, apples from nineteen to thirty-three cents. A. J. Philips thought a bushel of Duchess apples could be produced for 10 cents, and the writer thought that in southern Minnesota five cents would be nearer right.

The next paper, "The Mackinson Apple and its Place in Wisconsin Orchards," was warmly discussed. The older orchardists, Mr. Kellogg, Mr. Patten and Mr. Philips, thought that it was no better than Fameuse, while the younger members thought different, and that it should be more generally planted.

The Sauk Co. seedling (sometimes called Hanko) came in for its share of attention in a very flattering report by Mr. Reis, of Ithica. It is a red apple, about the shape and size of Patten's Greening. It is fair quality and keeps till February or March. It would compare favorably with some of our Minnesota seedlings.

The fruit exhibit was very good. There were more exhibits than in Minnesota, and the varieties with few exceptions were the same.

From the description of California as a fruit state, by Geo. J. Kellogg, Wisconsin and Minnesota are safe to tie to.

Wednesday evening was spent at the Avenue Hotel, American plan—which I think is an improvement over the Minnesota plan, as the members were all there to supper and after supper could talk apple as long as they wanted to.

Thursday morning, 8:30. Fruit marketing session, which was interesting to the fruit grower. From the discussions it was shown that the co-operative plan in the marketing of fruit was the most satisfactory and profitable.

Thursday afternoon Prof. S. B. Green entertained the crowd with up-to-date methods of ornamental planting. C. G. Patten then read a very instructive paper on breeding for hardiness. Some problems in plant breeding by Prof. Sandsten concluded the afternoon session.

After the adjournment Thursday afternoon, the banquet was next in order, and it was one of the pleasantest evenings the writer ever spent. With Dr. T. E. Loope as toastmaster, everything moved like clock work.

Officers for 1907: R. J. Coe, Ft. Atkinson, president; W. H. Hanchett, Sparta, vice-president; L. G. Kellogg, Ripon, treasurer; Frederic Cranefield, Madison, secretary.

Secretary's Corner.

PRESENT MEMBERSHIP.—At this date, March 27, the annual membership roll for 1907 stand at 1963. Adding to this the life roll brings the total present membership to something over 2100.

STRAWBERRIES ON A CLOVER BED.—Mr. G. A. Chaffee had unusual success with a strawberry field of one and one-half acres on his fruit farm at Long Lake, planted on a clover field, turned under just before planting. The clover growing in amongst the strawberries the year after planting partially shaded the fruit. The crop yielded at the rate of $400 to the acre. After securing one crop the field was turned over.

SOME NEW FRUITS FROM SOUTH DAKOTA.—The above is a title of a circular sent out by Prof. N. E. Hansen, of the South Dakota Experiment Station, located at Brookings, S. D. Any of our members who are interested in the breeding of new fruits can secure one of these circulars upon application to Prof. Hansen. It describes the new fruits of some value which he has so far originated and is offering to the public for general testing. A hardy strawberry, a hardy raspberry, some selected sand cherries and various other seedlings are noted in this list.

DISTRIBUTION OF OUR MEMBERSHIP.—The members of this society may be interested to note where the membership is located. The following list was made some months since, late in 1906:

Alabama	1	Minnesota	1862	South Dakota	45
California	2	Missouri	9	Texas	2
Colorado	1	Montana	1	Washington	2
District of Columbia.	2	Nebraska	2	Wisconsin	31
Illinois	6	New Jersey	1	Wyoming	1
Indiana	1	New York	8	Ontario	3
Iowa	24	North Dakota	155	Manitoba	22
Massachusetts	2	Ohio	2	Philippines	1
Michigan	4	Pennsylvania	2		
				Total	2192

A MISSOURI FRUIT EXPERIMENT STATION.—The effort being made in this state to secure from the legislature an appropriation for the purchase and maintenance of a fruit breeding farm makes the annual report of the Missouri State Fruit Experiment Station, at this time, an especially interesting one. We, in Minnesota, are modestly asking for $16,000 to purchase and equip such a station and $2,000 annually to pay the expenses for its maintenance. The Missouri experiment station cost the state last year the sum of $30,170, and their wants for the coming year foot up to $44,250. When the needs of Minnesota, that has yet to develop a suitable local pomology, are compared with those of Missouri, where the growing of all the fruits of the temperate zone is already assured, it would seem that our requests are excessively modest, and they should readily be granted. There are, after all, problems to be solved in Missouri, it is evident, and there will also be work still for the experimenter in Minnesota long after the choice varieties of winter apples, we now most need, have been secured.

THE PENDING LEGISLATION.—At this date, March 27th, as we are informed, both the bills in the state legislature in which the society is especially interested, viz: those providing for the purchase and maintenance of a fruit breeding farm and the founding and support of a school of forestry in Itasca State Park, have passed the senate without opposition, at least one committee in the house and are now in the hands of the house appropriations committee. The appropriations called for in their connection are likely to be made in the omnibus appropriation bill to be reported out near the close of the session. There is still time to speak a word for these measures with our law makers.

SUCCESS IN GROWING SEEDLINGS.—A member at Devils Lake, N. D., Mr. Will Truckenmiller, writes in this way of his success in growing apple seedlings from the packet of twenty-five seeds sent him a year ago. "I have nineteen fine little trees from the seed planted last year. Some of them are two ft. high, sturdy and strong, with well ripened wood. It was the driest summer and fall in many years, so the last of October I gave them a good irrigation, and early in November bent them over and covered with dry soil, and I hope they will come out all right in the spring." Mr. Truckenmiller's experience with these little seedling trees is commended to such of our readers as are growing seedlings or will make the effort to do so this coming spring.

LUTHER BURBANK ON MINNESOTA FRUITS.—The following extract will have special interest to our readers in connection with the movement now under way to establish a fruit breeding farm in our state. Under date of Feb. 27th, Mr. S. P. Crosby writes, "Only a few weeks ago I had the pleasure of visiting at his home and meeting Mr. Luther Burbank, at Santa Rosa, Cal. At his fruit breeding farm I saw several varieties of the cactus from which the thorns had been entirely removed and an edible fruit grown thereon; plums without pits; apples without seeds; *and he has knocked the scent out of the onion* without removing the flavor; besides many other wonderful things as a result of fruit breeding. In talking with Mr. Burbank he remarked: 'Mr. Crosby, you can and are going to do in Minnesota in growing fruit all we are doing in California, only it will take time to work it out.' So much from the great authority who has well been termed the 'Western Wizard'."

HONOR ROLL FOR MARCH.—The following members have sent in new memberships to the society since February 27, 1906, up to and including March 26.

J. A. Campion, Faribault	2	M. L. Gjestrum, Mankato	1
O. C. Chase, Fergus Falls	2	F. B. Millard, Willow River	1
Swan Floreen, Constance	1	E. Bonde, Cottonwood	1
Ole Oredalen, Kenyon	1	L. A. Clemons, Storm Lake, Ia	1
Rev. J. B. Katzner, Collegeville	1	Fred Wolter, St. Charles	1
Geo. W. Strand, Taylors Falls	5	R. A. Schutz, Leroy, Farmer's Institute	163
F. M. Crosby, Hastings	1	L. L. Bredvold, Belview	1
A. Brackett, Excelsior, Farmers' Institute	96	F. E. Cutting, Byron	1
Henry Flyen, Dawson	1	Louis Anderson, Long Lake	1
L. B. Arnold, Duluth	2	Clarence Wedge, Albert Lea	1
C. W. Becker, Windom	1	Thos. C. Jones, Russell	1
H. A. Lien, Montevideo	2	J. F. Wagner, Bennett, Ia	1
Rev. Aug. Hillger, Boyd	1	C. H. Brady, Deerfield	1
A. H. Reed, Glencoe	2	Mrs. Thos. McCarthy, Elkton, S. D.	1
F. C. Winkley, Minneapolis	1	J. E. Dodds, Wheaton	1
H. M. Rendahl, Cottonwood	1	F. J. Cooke, Roseau	1
S. H. McAdams, Swea City, Ia	1	Otto Kankel, Fertile	1

R. H. L. JEWETT.

(See opposite page.)

THE MINNESOTA
HORTICULTURIST.

VOL. 35. MAY, 1907. No. 5.

In Memoriam.

R. H. L. JEWETT,

CORNING, CAL.

Died Sept. 29, 1906, age 73 years.

Richard Henry Lee Jewett was born at West Greenwich, Rhode Island, in 1834. He was a son of Dr. Charles Jewett, who was well known in New England as a prominent worker in the early temperance movement. It was from him that Mr. Jewett got his early interest in horticulture.

Mr. Jewett came to Minnesota in 1856 and pre-empted land on Cannon Lake, near Faribault. It was a part of this land which he, in late years, had set to orchard and other fruits.

He enlisted at Boston Aug. 30, 1862, in the 2nd Massachusetts Inf. and was mustered out of service June 19, 1865, as captain in the 54th Massachusetts Inf. He was twice seriously wounded.

He was married, during the war, at Chicago, to Miss Eliza Nutting, and at the close of the war settled at Faribault, Minn., and followed his profession of civil engineer. For many years he was engaged in government and railroad surveying.

For the twenty years immediately preceding his removal to California a year ago, his home was in St. Paul. During that time he was employed in the state land department at the capitol. He resigned that position in October, 1905, and moved to Corning, California, in the hope that rest and a change of climate would benefit his health, but after a long illness he died on September 29, 1906, of nervous prostration.

He was a member of the Military Order of the Loyal Legion and Past Commander of the Acker Post, Grand Army of the Republic. Was a charter member of the Congregational Church, of Faribault, which church has recently celebrated its 50th anniversary. His last membership was with the Park Congregational

Church, of St. Paul. Mrs. Jewett, three sons and two daughters survive him. Of the sons, Charles F. lives at Corning, California; Edmund G., at Lowell, Washington; Frank F. is a lieutenant in the regular army, serving in the Philippines. One daughter, Mary L. Jewett, lives in St. Paul, and the other is Mrs. Ernest F. McGregar, of Avon, Connecticut.

In the death of Captain Jewett the society loses one of its most ardent and useful supporters, a practical horticulturist with long experience, a man of unusual discernment and good judgment, and ready sympathy. Mr. Jewett's position, ever since he became a member of this society, in the auditor's office at the state capitol, made it possible for him to serve the society to great advantage in many ways, and he was ever most ready to render this assistance whenever called upon. Some of the finest exhibits of fruit made by the society came from the earnest work of Mr. Jewett. His enthusiasm was easily passed on to others, and in a multitude of ways he was of much practical assistance to the society. Mr. Jewett became a life member of the society in the year 1900, coming in as an annual member a number of years preceding. His removal from our midst will be felt as a personal loss by his large circle of friends in the association.—Secy.

PRACTICAL RESULTS FROM SPRAYING.

C. H. TRUE, EDGEWOOD, IA.

Any means which tends to increase the profits of our orchards and fruit fields is most certainly worthy of consideration by such a large body of fruit-loving people as are here assembled in the fortieth session of what perhaps is the largest and most influential horticultural society in the union of states. We all understand that many details enter into the practice of successful orcharding, but it is my province to discuss only one of those things, and that one I consider of equal importance to, or even greater importance than, any other. Our leading horticulturists have almost ceased to discuss the question, "does it pay to spray?", but rather, in the emphatic language of Prof. S. A. Beach and Sec'y Wesley Greene, where, at the late meeting of the Northeastern Iowa Horticultural Society, they declare, almost with one voice, we *must spray.*

I do not purpose to refer especially to what others may have said and done in the matter of spraying, but rather to speak of some of the results of my own experience during the past six years in particular. Some three years ago a neighbor brought to me a

twig from an apple tree in his orchard that was completely covered with a tiny oyster shell-like scale and asked if I knew what it might be, and further stated that not a few of his trees were literally infested with it. I had to confess that I knew nothing of its history, but remembered that Prof. Summers, of Ames, had a few years previous shown, at a meeting of the Northeastern Iowa Horticultural Society, a similar appearing insect, which he pronounced the San Jose scale. With much anxiety I at once made an investigation in my own orchard and discovered that I had nearly 100 trees badly infested with the same insect that my neighbor had called my attention to. This was both a surprise and a discouragement to me. I had made a practice of passing through my orchard many times during the season to note what noxious insects or diseases might be preying upon the life of the trees, and I could not believe that any such thing as this scale could possibly have escaped my notice, and concluded that it must have made its appearance during that year. I now believe it had been there for a dozen years, if not longer. Some of the trees were already showing signs of injury from the ravages of this pest.

My first impression was to cut out all of those trees that were badly affected and burn them, but I finally concluded to first send some specimens of the insect to the professor of entomology at Ames for identification. This I did and at once received word from Prof. Summers, who pronounced it the true oyster shell scale, and advised a thorough use of the lime, sulphur and salt solution as a remedy. In the mean time I had written to a brother-in-law in Michigan who is quite extensively engaged in fruit growing, asking his advice. He urged me by all means not to destroy the trees, but rather to use the spray recommended by Prof. Summers, stating that he had about twenty acres of apple, pear and plum orchard that were badly infested with the San Jose scale, and that he had in a large degree overcome it by the use of the spray before mentioned.

Early in April that same season, and before the buds opened, I gave the trees a thorough coating of the mixture described, and then late in May, during the hatching time of the young scale, I thoroughly applied the kerosene emulsion. This practice I have continued for the past three years, and the result is that those trees are practically free from the scale today, while some of the trees thus treated appear more vigorous and healthy in leaf and limb than nearby trees that were free from the scale and needed no treatment. In addition I may say that there is positive proof that

the lime and sulphur spray has also acted as an effective fungicide in the prevention of fungous diseases.

One year ago this past summer my grape crop was more than half ruined with mildew and scab. I never had practiced spraying my grape vines, but last spring I decided to know for myself whether any benefit could be had from spraying the vineyard. Accordingly just before the buds opened I applied the Bordeaux mixture in the liquid form and followed it with the dust process, at three different intervals of from ten to twelve days apart. These latter applications were made on dewy or foggy mornings, usually

C. H. True, Sec'y N. E. Iowa Horticultural Society.

before breakfast and while the foliage and vines were well saturated with moisture. As to results: During the present season there was a slight trace of mildew on Moore's Diamond only; all other varieties seemed wholly free from disease of any nature, and this past fall I harvested the largest crop of grapes from those vines the vineyard has ever produced, the yield from less than 500 vines being over 16,000 pounds, netting at a low price for the fruit over sixty cents per vine. Possibly the mildew and scab might not have appeared to the extent that it did the previous year without the

thorough spraying which the vineyard received; we can not know. Nevertheless I intend to spray again next year.

For many years past, nearly every spring the plum aphis has made its appearance to some extent in the plum orchard, but never before were they so numerous as during the past summer. They not only appeared in great numbers on the leaves and terminal branches, but many were also found on the fruit stems and in some instances they almost covered the fruit itself. I saw at once that some heroic method must be used to prevent the destruction of the entire crop. During the presence of these insects there was a heavy coating of honey dew on the leaves and twigs of the trees, and, as I had a small apiary located at one end of the plum orchard, the bees were busily at work gathering the honey dew—which, by the way, some have claimed is secreted by the aphides, while others claim it to be an exudation of the leaves themselves. I am inclined to believe the former theory true, for I noticed on other trees near the plum orchard there was not the least trace of honey dew on the leaves of trees where the aphis did not appear. Owing to the presence of the bees I did not dare to use any spraying mixture that would prove injurious to them, so I decided on the use of the tobacco infusion, giving the entire orchard two thorough applications of that remedy, with the result that in a few days the aphides were almost completely annihilated, and a fairly good crop of plums was gathered. Still better results might have been obtained had the spray been applied several days earlier.

Having an evergreen hedge of arbor vitæ, which for years I had taken much pride in, and having discovered that myriads of minute spiders had made their abode among its foliage, causing it to fade and show indications of injury, and also having at hand some of the tobacco infusion left over from spraying the plum orchard, I concluded to use it upon the hedge and note its effect. The result was that the spiders were as effectually destroyed as were the aphides in the plum orchard, and the hedge row of evergreens assumed its natural color and vigor. I had treated the hedge some years ago with kerosene emulsion for the same insect and with the same results, but I regard the tobacco infusion as being cheaper and more easily prepared.

As to the benefit of spraying in the apple orchard, I may say that I have obtained from fair to good results, according to the thoroughness of the work in doing so. During the past season I have used both the liquid and the dust sprays. Following the practice of some others, for my own satisfaction, I have sprayed

some trees and left others untreated and others partially sprayed, and the results have invariably been in favor of spraying. With the Bordeaux mixture I feel positively sure we may largely control all fungous diseases, providing the work is properly done. The apple worm is not so easily controlled by this means, and yet we may and do greatly reduce its depredations in the apple orchard. I sprayed for this insect the past summer, first, as soon as the bloom fell, again in about ten days, the third time fifteen days later, and the last time August first, to catch the second hatch of the moth—the last application being made at the suggestion of Prof. Beach. The best results were always obtained where the work was most thoroughly done. For instance, when gathering the fruit more wormy apples were found in the tops of high trees, where the spray could not be so readily directed, and on the sides of trees, where the adverse winds prevented a liberal application of the spray material.

There is no other insect or disease affecting the fruit of the apple orchard that is so much to be dreaded or that is so difficult to control as the apple curculio. I think I may safely say that in my own orchard all other enemies combined have not one year with another caused so much damage to the apple crop as this particular pest has done. One year ago it practically destroyed the entire crop of apples, in spite of all efforts to prevent it. All orchardists no doubt are so well acquainted with this insect I scarcely need describe it here. Its peculiar crescent shaped cut on the little apples, from the time they are of the size of a large hazelnut until they are nearly half grown, always betrays its presence and its deadly work. Shortly after the fruit has been stung, its juices begin to appear on the surface of the apple, which after a short exposure to the sun and air thicken into a gummy or crystal-like substance, while perhaps ninety per cent of the fruit that is badly stung will drop from the tree before it is half matured, and much of that which remains until ripe is left in ridges and depressions, rendering it unsightly and unsalable in the market and almost unfit for home use. This insect does not seem to subsist upon the tree's foliage, but it seems to have marked the young apple as a most convenient spot for depositing its eggs, under the folds of the tender skin of the little apple, that is mortally wounded from once to a half dozen times by its piercing arrow. While the spray mixtures used for other purposes tend in a degree to molest the insect and to reduce the injury it otherwise might do in the apple orchard, at the same time in my own experience such remedies are far from being a sure preventive of the ravages of the apple curculio.

In conclusion I am glad to be able to declare that the labor and expense that has been devoted by me during the past few years to a thorough spraying of the orchard and vineyard has paid fully as well as any other work performed, and with this assurance and fully believing that what it has accomplished for me it will do for others under like conditions, I leave the question with you, with this one earnest entreaty: Let us all spray!

Mr. C. H. True: I wish to say that the method referred to in my paper is different from that mentioned in the paper read by the gentleman on the subject of the apple orchard in July and August. He mentions another method of keping down injurious insect pests in our orchards, and that is, by pasturing swine and shoats in the orchard. I have a nearby neighbor whose father was an early settler in the county. He set out an orchard of 350 trees. He is not in the nursery business but manages the orchard of his father. They have practiced for more than twenty years putting the swine in their orchard. This past season I went through their orchard. They have obtained perfect apples. It is a method we can all use, and it will insure us apples free from worms and fungous diseases, such as scab and other diseases. I went through that orchard, and I found it equal to the best sprayed orchard I ever saw. I have not got a pig of my own, and usually the commercial orchardist does not keep swine, so we must in such cases resort to the best method we have, which is spraying.

Mr. Geo. J. Kellogg (Wis.): How much can you head off the curculio, both the apple and plum, by spraying? What percent can you save?

Mr. True: I don't know that I can definitely answer that question, but I would say to a very great extent. I think we can get at least seventy-five percent of perfect apples by thorough spraying. I do not say that it is a success altogether, but it is a great aid.

Mr. Kellogg: How about plums?

Mr. True: Well, I have used dust spray this past season in spraying my plums. I have used dust spray on my plum trees with good results. My plum trees were not affected by curculio to a great extent. In certain seasons these insects are much worse than in others, but I think spraying tends to prevent the depredation of the curculio to a considerable extent.

Mr. Kellogg: How do you like that tobacco infusion? I have used it in checking the plum aphis for several years.

Mr. True: I prepare it according to the following formula: I take a quarter of a pound of tobacco stems, heat a pail of water to the boiling point and pour it on the stems and let it stand until it cools. Then I take a quarter pound of whale oil soap—and I understand that is an insecticide of itself—by weight and dissolve it in the water and add the two together; that gives you the mixture. I apply the mixture with a sprayer.

Prof. R. A. Emerson (Neb.): Did you ever try using the soap alone without the tobacco stems?

Mr. True: No, I have never tried that.

Prof. Emerson: By using the soap alone dissolved in water we can kill the black aphis.

SPRAYING MATERIALS.

PROF. HARRY SNYDER, ST. ANTHONY PARK.

It is a frequent experience that the use of the same kind and amount of a spraying material does not always give the same results, and sometimes, too, there is injury attending the application of an insecticide or a fungicide as great as would have been the damage from the ravages of the insects which the sprayer has sought to destroy. If one seeks the cause of the difficulty, he will find that there is a difference in the chemical composition and purity of the different spraying materials, as Paris green, London purple and hellebore, and also that there is a difference in the action of these fungicides even when they are apparently of the same degree of purity. In the case of Paris green, most of that on the market contains less than fifty percent of arsenic and twenty-five percent of copper. A good green should contain fifty-six to fifty-eight percent of arsenic and twenty-nine to thirty percent of copper.

The difficulty with many Paris greens that causes burning of the foliage is not adulteration as much as poor methods of manufacture, resulting in the leaving of a large amount of soluble arsenic in the green. When Paris green is properly made, practically all of the arsenic is chemically united with the copper, so as to be insoluble and to remain on the surface of the leaf. It is the soluble arsenic that is absorbed by the tissues of the plant which causes the destruction of the foliage. In some Paris greens as high as ten percent of soluble arsenic is present. If a green contains much over four percent of soluble arsenic, it will cause the scorching of foliage. Some greens are so poorly made that after they have been applied and come in contact with the plant leaves the arsenic is changed to a soluble condition.

The only remedy that can be suggested is inspection by the state of all insecticides and fungicides offered for sale. This is done in a number of states, notably California and New York, and the quality of the greens offered for sale in these states has gradually improved.

Loss from scorching of the foliage caused by soluble arsenic can in part be prevented by the use of an equal amount of slaked lime with the green. In many cases the presence of the lime will prevent the arsenic from going into solution and causing injury.

The joint use of Bordeaux mixture and Paris green is meeting with favor by many horticulturists. The Bordeaux mixture is prepared in the usual way, by dissolving six pounds of copper sul-

phate in twenty-five gallons of water, and four to five pounds of lime in twenty-five gallons of water. The two solutions are then mixed and well stirred. Before using, the mixture is strained through coarse burlap or a fine sieve. To this stock solution Paris green is added at the rate of about one-fourth pound to fifty gallons of the mixture. Such a combination has the advantage of being an insecticide and a fungicide and is especially applicable for the spraying of potatoes to prevent the spread of blight, as well as to cause the destruction of the bugs.

Some prefer the dust sprays because of their great efficiency of application. A good dust spray is made by dissolving four pounds of sulphate of copper in four gallons of water, and four pounds of lime in four gallons of water. Mix the two solutions and allow them to settle. It is the sediment obtained by settling of the Bordeaux mixture that is the active ingredient. The water is poured off, the sediment is allowed to dry in the air and then mixed with sixty pounds of pulverized slaked lime. To this Paris green can be added if desired. Other mixtures and combinations have been proposed and found effectual, but these are the standard Bordeaux preparations.

The copper sulphate used in the preparation of the Bordeaux mixture is not generally adulterated. Many of the special preparations put out under trade names, as paragrene, slug shot and black death, contain adulterants from sixty to ninety-two percent, and they are not efficient for spraying purposes.

On the whole it is best for the horticulturist to use only standard brands of Paris green that have been shown by inspection in other states to be of high purity, to use with the Paris green a little slaked lime to prevent the arsenic from going into solution, and in special cases to make a joint use of Bordeaux mixture and Paris green.

Mr. Merritt: How will dust spray affect the timothy and clover cut in the orchard if fed to cattle? Will it not be very injurious?

Prof. Snyder: It depends largely upon the amount of spray you have used. The usual method of spraying is to take one pound of Paris green to 200 gallons of water, and immediately under the tree there is a little danger, but if there has been some rain or a little dew after spraying that is largely washed off. If the spraying has been done in such a way that accumulations have been formed in some places it might be somewhat injurious, but where it is properly done and evenly put on the trees there is very little danger. However, on the whole it is better to use that part of the cutting for mulch or some other purpose than feeding.

Mr. E. G. E. Reel: Did I understand you to say that one pound of lime was sufficient to neutralize the effect of one pound of Paris green?

Prof. Snyder: Yes, it is. It depends largely upon the lime.

Mr. Reel: More will do no harm?

Prof. Snyder: It will do no harm, but it is apt to give a little trouble in the way of clogging the spraying machine.

Mr. R. A. Schutz: It would not be safe to turn the hogs into an orchard that has been sprayed?

Prof. Snyder: Not immediately after; yet there is little danger from it. But it is possible that the machine has not been working perfectly, and there is a good deal of dripping in one spot, but where it is evenly spread the danger is very slight. I would first look about the orchard to see whether there is any undue amount of the mixture spilled before turning in the hogs.

Mr. Schutz: It would not do to have them in at the time of spraying?

Prof. Snyder: It would be better not.

Prof. F. L. Washburn: Dr. Cook experimented to see what Paris green would do. He made a Paris green solution and allowed it to drip on the grass. He used a strong solution, one pound of Paris green to 100 gallons of water, and then he turned his horse in on the grass without any injury. I think, Mr. President, it is perfectly safe to turn stock into the pasture after using Paris green. A gentleman downstairs told me he sprayed his apple trees with arsenic and lost all his turkeys and lambs. I think there is no danger whatever with Paris green.

Prof. Snyder: It is true if the spray is evenly applied, but there is a possibility of the machinery not being in perfect working order and getting too much at one place.

Mr. Brackett: In Iowa they are using arsenic. The arsenic is boiled with sal soda, and it makes a solution that does not settle. They are using that most successfully.

Prof. Snyder: Yes, and there are two or three others, but I thought it best to keep to the Bordeaux mixture, as our people want as inexpensive a spray as possible, and I think the Bordeaux is a little better on that account. However, the other spray is a very good one.

Mr. J. F. Benjamin: Is there any possibility of poisoning a hog by any mixture?

Prof. Snyder: I do not know about the hog, but cattle are quite susceptible.

Mr. Benjamin: It is generally supposed that a hog is immune to poison.

Mr. Prosser: Should we not have a law requiring a rigid inspection of Paris green that is sold in our markets? I think now is the time for this society to push such a law.

Prof. Snyder: It probably would be very helpful, but that is something that the people would be better able to recommend than I. There is undoubtedly a large amount of poor arsenic on the market, and with an inspection there would undoubtedly be an improvement in the condition of spraying chemicals, if we could get such a law. Other states have such a law and have profited by it.

Mr. Prosser: When I buy a pound of Paris green I have no way of telling whether it is pure or whether it is impure. We have nothing in our general market to show an analysis of it. Some of it is not fit to use at all.

Prof. Washburn: There are several ways by which a test of the purity of Paris green may be made. One is by putting a little on a piece of glass, then tipping it up and tapping the glass. If it leaves a white streak on the glass it is bad, it is adulterated in some way. Another way is to take a little ammonia in a glass and drop in a little Paris green. If the ammonia turns a deep blue and there is nothing left in the bottom, the Paris green is all right—barring possibly an excess of arsenic, which is soluble in ammonia—but if there is a sediment left it is adulterated. You do not want more than a quarter of a teaspoonful in a wine glass of ammonia. This is a negative test. These are the only two tests that are in the hands of the farmer. If you have a microscope you can tell immediately. Paris green seen through a microscope will show the oval shape of the grains, clean cut, but if there are white particles in it, it is adulterated.

The Box and Barrel.—There has been a great deal of discussion of late as to the relative merits of the box and barrel for apples. For storage purpose there is little difference, as fruit keeps about as well in one package as the other. For commercial use in the open market, each has some special claim of merit. The box is a more convenient package to handle, and since it cannot be rolled and tumbled about like the barrel package, it affords greater protection to the fruit. It is also of much more convenient size for the average city consumer who wishes to purchase an unbroken package.

THE INDIVIDUALITY OF VARIOUS PARTS OF PLANTS

PROF. SAM'L B. GREEN, ST. ANTHONY PARK.

We ordinarily think of a plant as having the same general characteristics in all of its parts, that is, that a cutting from a branch would make just the same kind of a tree that a cutting from the stem would make. In the case of a few plants, however, this is not so, and probably there is a greater difference in this respect than we are prone to believe.

Fig. 1.—A plant grown from a side branch of the Auracaria excelsa.

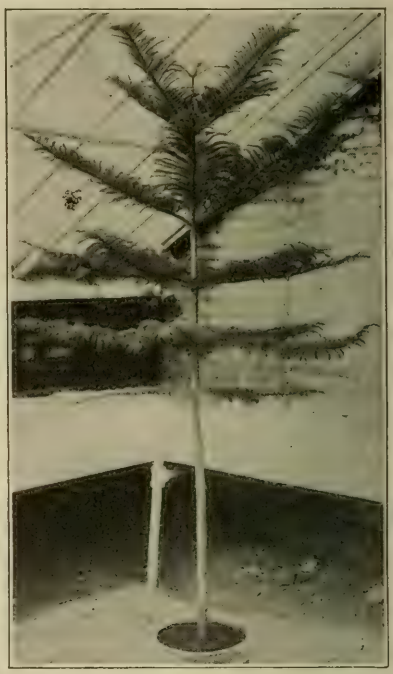


Fig 2.—Plant of the Auracaria excelsa from which the cutting was taken growing plant shown in Fig. 1

The Japanese evergreen, known as Auracaria excelsa, shows marked variations in plants grown from the side branches and those grown from a central stem. In Fig. 1 a plant is shown grown from a side branch. This makes a reclining plant and has to be tied in order to give it an erect position. The plant from which this photograph was taken is shown in Fig. 2, and it is noted for its very erect and regular form. I have grown many plants from the side

branches of this plant but have always found them to remain as side branches and never to take on the erect form of the parent plant.

Quite a number of plants commonly grown are what are known as bud variations, that is, the variations are due to changes in the branches occurring on the plant, which may be as marked as any that occur from seed, although they are seldom so exceedingly variable.

Fig. 3.—Plant of variegated abutilon, showing branch reverting to parent type

Figure 3 shows a plant of the variegated abutilon, which has maple-shaped leaves, the outside of which have a rim of perhaps a fourth or half inch of clear white, while the balance of the leaf is green. Such variations in plants occasionally revert back to the original type, and in this case it will be noted that the tallest branch shows none of the white variations but has reverted to the type of the parent plant. It will be noted also—and I have frequently noted the same thing in others of this class of plants—that where a branch of a plant of this description reverts back to the original it grows with more vigor than the other branches of the plant with the variegated foliage on which it is found. At the time our photograph was made the variegated portion of the plant had been cut for propagation.

THE BARREL—Has the prestige of long usage, and commission men and fruit handlers, both in this country and abroad, are more or less prejudiced against the box for eastern grown apples. Largely for this reason the box will probably not prove a profitable package for general use upon the open market for some time to come. For fancy fruit, however, with a special trade developed, the box is likely to prove desirable.

FIFTY YEARS IN STRAWBERRIES.

GEO. J. KELLOGG, LAKE MILLS. WIS.

This takes me back to the palmy days of the "Wilson's Albany Seedling," which originated in 1857. A better berry than the Wilson has never been found. I hear some one say it was "too tart;" that was one of its best points; all you needed was a little more sugar. As usually picked, while it was red, it was tart; it should have been left on the vines another day. But for the burning of the leaf, causing rust, it might have continued to this day. Very few have the genuine Wilson now, my last two efforts to procure pedigree stock being failures. Spraying would probably have saved the Wilson.

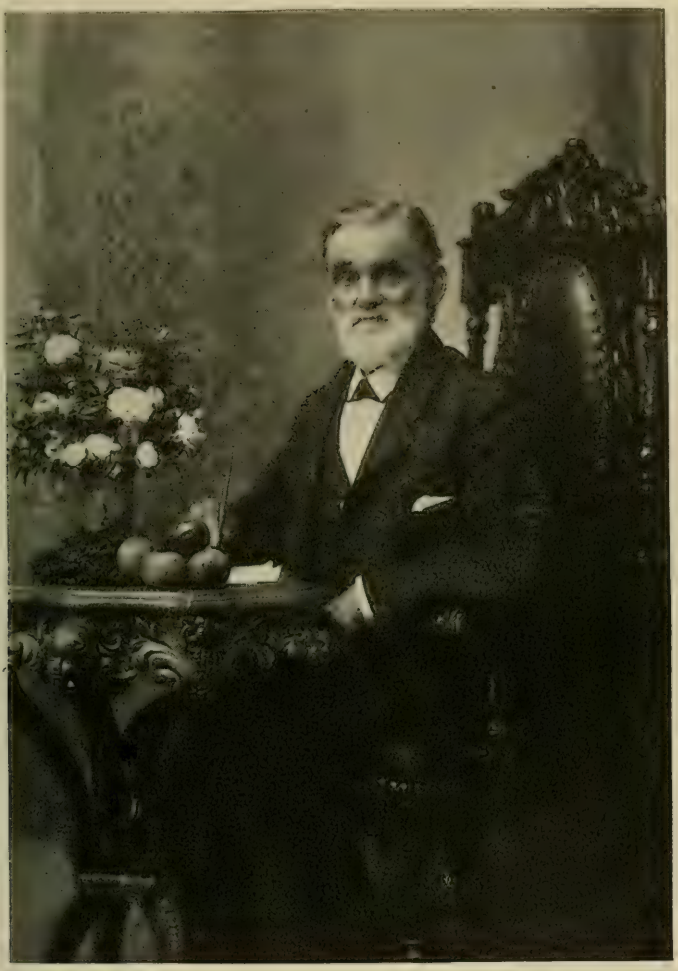
When the Wilson was in its prime, Mr. J. Morse had a strife with Mr. Jenks, in Janesville, to see which could grow the most fruit on a square rod. One picked five bushels, the other four and one-half. J. M. Smith, of Green Bay, grew 222 bushels from one-half acre. Wm. von Baumbach, of Wauwatosa, picked 1,700 bushels of Wilson and Crescent from five acres, less ten square rods, measured by J. S. Stickney.

The Crescent originated in 1868. As a pistillate it has never had its superior. Pollenization was not fully understood even at that late date; in fact, the Crescent was not without some pollen, or my first planting of seven rows solid, nineteen rods long, would not have produced one hundred quarts per row each picking for several consecutive pickings.

My first experience with strawberries was picking the wild Wisconsin strawberries in 1836, nearly one year after my father made it his home among the Indians, near where Kenosha now is. In 1835 the Hovey, Early Scarlet and Boston Pine originated in Boston and soon found their way west. They were productive and good, though soft. Soon the Agriculturist, Jucunda, Triumph de Gand and many others had their run. About the time of the Crescent, came the Capt. Jack, which, if we had known how to spray, we might have retained to the present time. If I should mention all of the good kinds I have tried in this fifty years, it would weary you.

The Jessie started in my own town, and when the convention met in Janesville to view the acres of Jessie on Mr. Loudon's grounds it created a furor. We found one berry that measured nine inches, seven filling a quart. On Mr. Loudon's grounds the drouth was so severe that great cracks in the clay were all through the beds that picking time. The failure of the Jessie to adapt it-

self to all soils made some think that the plants were "doctored" in some way to make them fail in order to sell more plants. This is a splendid variety but is partial to certain clay soils. I think the first Jessie sent out were slightly injured by the previous winter.



Geo. J. Kellogg, Lake Mills, Wis.

Splendid has been one of the best on prairie soil. I picked at one time, when I had five acres, five quarts without moving out of my tracks, and could have reached the other five quarts by turning around. Clyde was one of the best last season on three year

beds. Of the Lovett and Bubach, I had a picker thirteen years old that picked 230 quarts in ten hours while working by the day. A. G. Kellogg & Richardson, of Webster City, Iowa, on twelve acres, with about one hundred pickers picked six thousand quarts a day. My boys, at Janesville, last year, picked from five acres three thousand two hundred quarts a day.

With plenty of experience, good land well-prepared, good kinds well-planted, a good season, a good market, a good man or woman with brains and muscle and the "know how," there is no limit to productiveness and profit in the strawberry business. The "know how" is almost as necessary as it was to the engineer who charged fifty dollars and fifty cents to start the machinery in the factory, the fifty cents was for the work, the fifty dollars was for the "know how." But there is a large proportion to the *work* in the strawberry business; but any one going into it on a large scale better go and work one season for nothing and learn of some one else the "know how." Everybody that has a square rod of ground ought to raise his own strawberries, but to make it a business is another thing. Our books are full of instructions, and any one with muscle and common sense may make a partial success of it.

Soil and location: Any good garden soil, and, if raising to sell, any good market. I had a singular experience trying to raise a big crop from new woods soil where Indians had had a corn field; part of the plat was covered with hazel brush ten feet high and wild crab apples. After the first crop of turnips, I planted nineteen varieties of strawberries, including such kinds as Wilson, Crescent, Capt. Jack and other best sorts, expecting that on twenty acres of new land I should find a gold mine. The crop was hardly worth picking, while just over the fence on ground that had been worked for twenty-five years without manure the same kinds gave 260 bushels per acre. I cleared off that whole twenty acres of wood lot, but strawberries would do nothing till it had been cropped about five years. There was too much leaf mould, and while other crops were a success, strawberries, for the first five years, were a failure.

The hedge row system will bring larger and finer fruit but less in quantity, and except for special markets it will not pay the commercial grower.

Varieties to plant? I have hardly been in the business long enough to answer that question. After following the business forty-seven years at Janesville, I quit and turned it over to the boys. I moved to Lake Mills and set out eighty varieties of strawberries to

quit on, and I have been quitting for eight years ever since. I tested seven kinds of promising new seedlings of J. R. Reasoner, the originator of Dunlap, but they were all failures. At one time I saw four thousand new seedlings in full fruit on Mr. Loudon's grounds that were very promising, but none of them ever equalled the Jessie; many, I think, were far ahead of many varieties that have been pushed onto the market. I grew Wm. Belt so that twelve filled a quart box, but it is worthless. My boys picked Enhance in 1905 for market in October, but it is only one of the good kinds for summer market.

Sample is one of the most perfect berries, but the blossom is imperfect. Brandywine—except for the name—would be the best late berry if more productive. Bederwood is one of the most productive early berries, but it is off color and a little too soft. Warfield is one of the best pistillates, but it won't stand drouth. Dunlap beside Warfield is perhaps the best pair I know of. Aroma has hardly a fault, unless on some soils it may not produce enough; it is one of the best for pollen. Parson's Beauty is nearest the old Wilson of any in two hundred kinds I have tried, but I fear not productive enough. I was worst sold at one dollar a plant on "Wild Wonder" of everything I ever tried; the best I could do with it was two hundred to the quart of the largest sized ones. Bubach is very fine for family use, but it skips a crop once in about four years, and "pedigree" stock will not save it. I have never found an early berry that filled the bill. I have tried Michel, Johnson, Cameron, Crescent, Wood, Warfield, Van Deman, Excelsior and many others.

Mr. Henry Husser: I would like to know what Mr. Kellogg, as an old strawberry grower, would recommend as the best berry for a sandy clay soil in regard to firmness and quality.

Mr. Geo. J. Kellogg: I cannot give anything better for a late berry than the Brandywine, and for a medium early berry than the Senator Dunlap. There are many other good kinds, but I do not want to give you more than twenty-five kinds to start with. (Laughter.) Try them and hold fast to that which is good.

Mr. J. M. Underwood: I would like to ask Mr. Kellogg whether he concurs in Prof. Shaw's advice to plant nothing but perfect varieties.

Mr. Kellogg: If a farmer had good common sense he could plant pistillate in one row and staminate in another row, but for the farmer I would not recommend anything but the perfect blossom.

Mr. Underwood: For those who do not have common sense? (Laughter.)

Mr. Kellogg: I would plant both varieties.

Prof. Shaw: I am a farmer, and I got so badly beaten once by that sort of thing that I am inclined to give advice and give

it free. The farmer is all right when he has his two rows and keeps them side by side, but let him go and set another plantation, and he loses all his labor.

Mr. Kellogg: Let him keep a record. That is because he does not keep a record.

Mr. Henry Husser: I think Prof. Shaw thinks too little of the farmer. I think they have enough intelligence so they can keep two rows apart.

Mr. A. Brackett: Nine-tenths of the farmers never think of labeling anything. When they come to plant a new bed, they will pick out the nicest plants and plant them, and if they do not happen to get a self-fertilizing plant they get nothing.

Mr. Kellogg: I think it is the safest plan for farmers to plant perfect varieties. There are plenty of perfect varieties, so there is no need of planting pistillate.

Mr. Underwood: Are not pistillate varieties a little better producers?

Mr. Kellogg: They are.

Mr. C. C. Hunter: What strawberries are the best shippers?

Mr. Kellogg: The Dunlap and the Warfield. They can be picked together and shipped together because they look alike. The Brandywine is one of the best big berries, and another is the Aroma; they go together, and they are both perfect varieties.

Prof. Shaw: I noticed Mr. Kellogg spoke very favorably of the Clyde. I have taken a great liking to the Clyde, and I would like to have him state the reason for his preference for the Clyde.

Mr. Kellogg: The Clyde has some objections. In a wet season it rests too close to the mulching and rots, but I saw the finest Clydes on a three-year-old plantation I ever saw anywhere. When I first commenced to fruit it I thought I did not want anything else, but it does not hold well in a wet season.

Mr. R. A. Wright: What would you consider the best producer for the market?

Mr. Kellogg: I would plant the Aroma.

Mr. F. M. Crosby: I would like to inquire whether they would go without mulch?

Mr. Kellogg: I would not do it. Mulch every time, and the farther north you go the heavier you want to mulch. If you are sure of having snow till April you don't want any other mulch.

Mr. G. A. Anderson: Do they require heavy fertilization?

Mr. Kellogg: Yes, give them forty loads of well rotted manure to the acre, put it on the year before, and then also your ground will be in better condition if you had it in potatoes the previous year.

NOTES FROM THE OHIO MEETING.

PROF. R. S. MACKINTOSH, AUBURN, ALA.

It was my unexpected pleasure to be able to attend some of the sessions of the Ohio Horticultural Society, in January. The meetings were held during convention week and at sundry times and places.

It seems to me that if they put as much business into their work when at home they must keep things moving all the time. The first session was held just before one of the principal night sessions of the American Breeders' Association, and was partly shortened on that account. The president, Mr. Cox, presented his address, which was full of business suggestions. He believed that more *careful spraying* should be done and above all that *honest packing* should be the rule. He believed that measures should be taken to prevent the use of short measure packages.

One session was devoted to the reports from the several professors on insects and diseases during the past year. Insects in Ohio must have a hard time escaping the several entomologists. During this meeting there were at least three of their entomologists in the room. They did not often disagree, so I take it that they aim to keep all insects out of sight.

Most of the day sessions were held in Townsend Hall, out on the university campus. The display of apples was good and certainly showed that Ohio can produce fine apples. Professor Lazenby was busy looking after his classes, his forestry association and for the welfare of the horticultural brethren. Dean Price, formerly of Iowa, was engaged all the time looking after the several meetings. I believe that about fourteen organizations held meetings there during that week. No wonder Ohio has furnished so many presidents.

The Cost of Box Packing—Is greater than the cost of barrel packing. For successful box packing, the fruit should be carefully sized and a certain number of apples put in each box. Grading is a difficult matter with inexperienced packers, and a mechanical grader would be of great value to the orchardist who packs in boxes, providing one could be secured which would do the work accurately without bruising the fruit.

SEEDLING FRUITS, ANNUAL REPORT, 1906.

WYMAN ELLIOT, MINNEAPOLIS, CHAIRMAN.

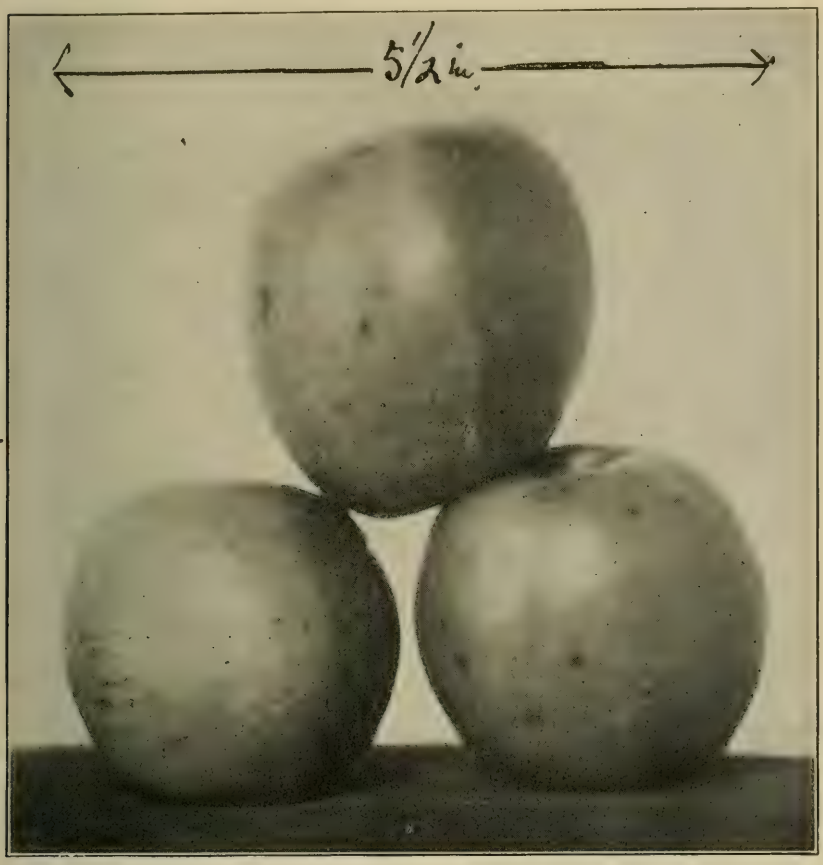
Now, before I start in with the report of the committee on seedlings this year I want to preface it with a few remarks. At the close of last winter's meeting I gathered up a lot of seedlings and grafted varieties and put them in roothouse storage conditions and did it for this purpose: for testing them and comparing them with each other as to their keeping qualities. Out of thirty-eight varieties tested at three different times, March 15th, April 13th and May 22nd,—I did not test earlier, as I ought to have done, in February—almost all of them had kept pretty fairly well up to March 15th, but a great many of them from March 15th to April 13th went down. Out of all the thirty-eight varieties that were

Decker's Winter Seedling.

tested there were six that were picked out as especially fine, and two of those six are on exhibition at this meeting and have scored the highest in the winter class. While they are not high in color, they have some exceptionally good qualifications as a commercial fruit. There were eighteen of the grafted varieties, so it was a pretty fair test of the keeping qualities. Some of those that kept until May were carried along until the summer meeting and were on exhibition at that time, and many of you saw them at that

meeting. If there are any questions you would like to ask about this fruit I would like to answer them now.

Mr. Busse: I would like to get the names of those that kept best under those conditions.



"Almina," G. W. Coates' Seedling

Mr. Elliot: I take them about in the order in which they were judged, their value for commercial purposes, quality, size, color, etc., taken into consideration. I consider the Perkins No. 72 the finest apple in the lot. It has color, size and quality, and if it stands up in further tests as well as it did last winter, I do not see why it is not a variety worthy of propagation.

The next best variety was the J. S. Decker winter seedling. It is a green apple, turning yellow later in the season. It is not

of as high a quality as the one named first, but it is a splendid cooking apple and commercially it fills a place in the western country here that the old Rhode Island Greening does in the east, and I think it is worthy of propagation.

The next best is the Coates' seedling. It is on exhibition here. It never has been propagated. I do not know whether it will be propagated, but I know it is a first class quality apple and is standing up remarkably well as a long winter keeper, cutting fine in the middle of May.

There was another seedling, the G. A. Anderson, which is an apple that is small in size. That has never been propagated, but it really tested well and pleased me very much, and I consider that to be one of the coming apples.

Then there was the Lampert seedling. You remember there were a lot of apples, fourteen or fifteen, put on the table last year, resembling the Malinda, of higher color, and there was considerable dispute as to whether they were a Malinda seedling. I was very much impressed with the way they were keeping. It is not of a high quality, but of a good commercial value.

There was one other that is not on exhibition this year. That was Mr. Lyman's Evelyn, that stood up nicely and was in very good condition in May.

Capt. Reed: Is the No. 72 Perkins seedling on exhibition?

Mr. Elliot: No, for the reason that a wind storm blew Mr. Perkins' fruit off the trees and injured the trees so severely that we are deprived of the test this winter.

Mr. Philips: Have you any record of that Brown seedling from Baraboo. You know you wrote me that you cut it in May. He called it the Gem seedling.

Mr. Elliot: It is classed here as "early winter." It was in fair condition the 15th of March, but April 13th it was out. Now, these tests, of course, vary from year to year. Some of the varieties that I have been cutting at this meeting I find are not keeping as they did last year. They do not show the same testing qualities, and as a general thing our apples all over the state do not keep this year as they did last. Our seasons vary, and for that reason we have to make new allowances, and it is only by a series of tests from year to year that we can decide as to what an apple is going to do finally. The testing of apples by cutting is no test at all. While I cut and test an apple here and regard it of certain quality, I may change my mind in three months from now very materially. In that regard there is one variety I have in mind particularly. We cut it at the fair and at the December meeting, and it was in good condition both times. I put it in the storage we used, not cold storage, and it kept right along through the sea-

son as the rest of them did. It did not have the ability to maintain itself up to the best color up to May, and it was put on exibition at the meeting this fall in very good condition. Now, there is an instance where we cannot always tell what an apple is going to do the first year. There are other varieties that we have tested here today which I am satisfied three months from now will test better than they did today, but we had to score them at this time. Just for this reason we need a standing testing committee that shall get together every month in order to test these apples at all times and under all conditions; then there will be a fair test.

Now, referring to the exhibition at this meeting, Prof. Green and I judged them as we thought they would stand, and we have gone over them two or three times and examined them very carefully. We have decided that this is the highest in the winter class, (exhibiting apple), this Decker seedling. While it has not the color that many of the other varieties have, it has the quality that makes it a first-class commercial apple for cooking, and it is going to take the place of the old Rhode Island Greening when it is propagated and put under cultivation. There are two trees of it in existence. Two sprouts came up where the tree died and the man split the stump and planted out two trees, and he sent apples from each tree here last year and year before. I have kept track of it for four years. It is firm and solid and will keep up to May all right. It is a very clean apple.

Mr. Johannesohn: What is the name?

Mr. Elliot: Decker's winter seedling.

The President: How does it compare with the Northwestern Greening?

Mr. Elliot: It is fully as good, a little sharper acid.

The President: Have you seen the original trees?

Mr. Elliot: I have not seen them.

Mr. Busse: How was it kept until May?

Mr. Elliot: It was kept in ordinary root cellar conditions.

Mr. Philips: I believe it grows near Austin.

Mr. Elliot: Yes, it grows near Austin. The next best seedling is this (indicating), which scored ninety. This it not so large, but it is higher in quality. I handed a piece of it to Mr. Patten, and he pronounced it very good indeed. This one (indicating), kept clear up to May and was shown at the summer meeting in good condition. This is the Coates' seedling and has never been grafted. It is of a fairly good size for a seedling. When it is cultivated and propagated it may increase or decrease in size, we do not know yet, but I have advised him to top-work and let us know as soon as possible just what it will do.

This is a plate of pretty nice apples (exhibiting), and they tell me it is a fairly good keeper, but we have thought that it ought to be classed as early winter, and for that reason it did not score as high as if it had keeping qualities. That scored eighty.

This is Prosser's seedling (indicating), and comes from southern Minnesota.

Mr. Prosser: Did you ever keep that through the winter to compare it with other apples?

Mr. Elliot: I have not because I have not had it.

This (indicating), is the G. A. Anderson apple, which I spoke of before. This never has been propagated, but if it will increase in size I think I would as soon have that apple as anything on the table. It is a very good apple.

Here is another Wisconsin apple from Mr. Tuttle, of Baraboo. It is a fine apple and scored up to eighty points, the same scoring as the G. A. Anderson apple received. It is firm and solid and looks to me as though it was going to be a good cooking apple.

Here is an apple (indicating), that has been on exhibition and has taken the premium for several years. That is one of the conditions that bars it out. There is not a better apple in the whole lot than this today when you consider quality, etc., and it scores up to the first of February. It is not what we call a late winter keeper. It is an early winter, but if you keep it in the right condition, you can keep it till the middle of February. It is the Evelyn.

That comprises all we have of the winter varieties. There are twelve in all that were judged. There are some that we threw out. There is one plate to which I want to call your attention. I will hold up these two apples and want you to say what they are. They were put on exhibition as being a seedling of the Fall Stripe, and as quick as I cut one and tasted it I said at once it was a Wealthy or a seedling of the Wealthy that had reproduced itself. Here is another. It is an old grafted variety placed on the table to catch the committee. It is a very small specimen this year, but last year they were magnificent.

Mr. S. M. Owen: Are any of these apples promising candidates for the thousand dollar premium?

Mr. Elliot: No, I have not seen one yet that will fill the conditions. You are a pretty old man, and there are lots of young men who will be as gray as you before that premium is taken, I think.

Prof. Harry A. Huston: (Chicago). Now, there is something in regard to this matter of testing these apples that I do not understand. I would like to know whether this fruit which you have been testing came directly from the trees, or had some of it been on exhibition?

Mr. Elliot: It was gathered up from the tables, and I do not know what the conditions were previous to this meeting, but after it I do.

Prof. Huston: That is what we want to get at. There has been some work done, to which your attention has, perhaps, not been called, in the Agri. Department, in regard to cold storage apples. Experiments were made testing the changes taking place in apples in keeping and handling the fruit from the time it leaves the tree until it reaches cold storage. If we are to have a definite

idea of the keeping quality of apples, they must be brought directly from the tree to cold storage.

Mr. Elliot: I could not say in regard to these apples how they were kept. We had to take them off the tables; they were shipped to Excelsior and kept in root cellar conditions.

Mr. Merritt: Is the sprout from that dead tree properly called a seedling?

Mr. Elliot: Yes, sir, that is a seedling. Mr. Kellogg gave a very good answer to that question just a little while ago. I take it that where you are grafting, it is done by grafting on seedlings. You do not know from what particular apple that seed came, and you may have a wide variation in stock, etc. This tree was a grafted tree, grafted on a seedling, and the sprouts came from the roots after the tree had died down. Now the president says we are short of time, and I will just run through this lot we have here and tell you what they are. Here is the Moran apple Mr. Philips spoke of. According to the statement of Mr. Philips, it is a good apple. Here is an apple grown by Mr. Howard, one of his seedlings, and it is a splendid cooking apple. Here is another grown by Mr. Clemons, of Storm Lake, Iowa, which is another good one. Here I want to show you the effect of the stock, the difference in the stock. These are Malinda, top-worked on the Duchess (indicating), and these (indicating) are Malinda top-worked on the Transcendent, grown in the same orchard. These from the Transcendent were last year sent to Washington and were pronounced first-class in quality. If grafts on the Transcendent will make a first-class Malinda, it is worth knowing.

Mr. Kellogg: These are supposed to be the best in the class from each tree?

Mr. Elliot: Yes, sir.

Mr. Kellogg: You could not have picked those out at random.

Mr. Elliot: That is about the usual size.

Rules for Successful Storage.—It is possible to lay down a few rules, or rather principles, upon which the successful storage of fruits is based. These, briefly stated, are as follows: 1. Fruit for cold storage should be well matured but still firm at picking time. 2. After picking it should be hurried to storage with the least delay possible. 3. The temperature of the storage room should not be higher than 32 degrees. For apples and pears 30 degrees is none too low. The lower the temperature within the limit of safety to the fruit stored, the longer it will keep. 4. Quick ripening fruits, like summer apples, early pears and peaches, should be stored in small packages so that the fruit can be cooled down quickly, thereby preventing undue ripening. 5. Fruit wrappers prolong the life of the fruit in storage.

WINTER-KILLING IN THE WINTER OF 1905-6.

E. A. SMITH, LAKE CITY.

I sent a letter containing inquiries relating to the winter-killing in the winter of 1905-6 to twenty-six people. A stamped envelope was enclosed. Out of the twenty-six, who ought to be interested in matters of this kind, but sixteen replied.

Question 1. Was there more than the usual amount of winter-killing in your locality?

Answer. Six answered "Yes," two were doubtful, and eight answered "No."

Question 2. What varieties suffered most?

Answer. Evergreens, strawberries, raspberries and semi-hardy varieties in general.

Question 3. To what do you attribute the cause?

Answer. Nearly all who reported attributed the cause to the comparatively mild winter followed by severe weather in March.

As there was such a difference in the damage done and varieties affected in different localities, it may be of interest to review the answers.

At Faribault, no damage was reported except on strawberries.

At Lynd, O. C. Gregg reported no damage done of any kind—stock all came through in fine condition.

At St. Anthony Park, the arbor vitae were reported injured and stock in general was injured more than usual.

At Excelsior, strawberries, raspberries and arbor vitae were reported injured and damage done to other stock, especially to old apple trees.

At Owatonna, strawberries were killed and nearly all the arbor vitae froze to the ground.

At Duluth, small fruits in general, also elms, plums and arbor vitae were injured. Conditions at Duluth were aggravated by heavy snow falling and clinging to the trees, followed by freezing weather; branches were broken from the trees, and, as our correspondent expresses it, they were smothered by ice forming upon them.

At Lake City, strawberries, raspberries and arbor vitae suffered most.

At Montevideo, some fruit trees, shrubs and herbaceous plants were killed, but no loss was reported on evergreens. One item of interest in this report from Judge Moyer is, that the young trees budded on Pyrus baccata suffered more than young trees on the ordinary piece root.

At Albert Lea, arbor vitae, Scotch pine and nursery trees were injured badly and strawberries were badly hurt.

From station reports published in the July number of the Minnesota Horticulturist, we notice that at the Glencoe trial station, pear trees wintered finely without extra care; at Jeffers and Pleasant Mounds trial stations, there seems to have been but little damage done; at West Concord trial station, the arbor vitae suffered.

My observation is that the winter was very freakish, and the damage done in some localities most peculiar. For instance, at Lake City, in evergreens, a hedge of white pine, one-fourth of a mile long, trees a foot in diameter, about eighteen years old, were generally uninjured, but two of the trees were found entirely killed, while not another was affected or even turned brown. What killed those two trees apparently as vigorous as the others?

A peculiar phase of blight was noticed upon the arbor vitae. I call it pneumonia of the arbor vitae. We have a hedge upon either side of the road leading from the railway to our nursery grounds. Up to April 10th, there was no sign of blight upon the foliage. Soon after this date sprays of the foliage commenced to turn yellow here and there. It spread rapidly covering almost the entire plant, upon which it fastened itself at varying distances. These evergreens in the hedge are about five feet high. The limbs seemed to shrivel until the main trunk was reached, and that commenced to dry up, yet the roots seemed perfectly green and healthy. Those most affected were dug out, and new plants set in their places. On a lawn near this hedge were three pyramidalis arbor vitae, that were planted about six feet apart. One of the arbor vitae was attacked with this blight and died. The other two showed no signs of blight. In a yard not fifty feet away, stood three other pyramidalis arbor vitae. One of them had two main branches growing from the root. One of these branches was attacked with this blight and died, the other was not affected. Can any one explain why, here and there, an apparently healthy specimen was killed? The larger arbor vitae seemed to be affected more than the younger plants. A few white pine were also injured. We have received reports from different parts of the country of the arbor vitae being hurt with this blight. In some cases the plant recovered, but in many instances it was entirely killed. Is this the same kind of blight which attacks fruit trees?

In a yard of one of the schools at Lake City, were some large Scotch pine, about a foot in diameter. These were badly hurt, one being killed, but this fall most of them seemed to have recovered and were looking fairly well.

A pyramidalis arbor vitae, at least fifteen feet high, stood just back of Mr. Underwood's home, in Lake City. It was under the shelter of a large elm tree. It was killed, while not one hundred feet away were three other splendid specimens of the pyramidalis arbor vitae in the open which were apparently uninjured. Diagonally across from this place of meeting, last summer I saw an arbor vitae six inches in diameter and about ten feet high completely seared, while on another street not far away was a smaller specimen in good condition.

From these peculiarities noted, we arrive at the following conclusions: The more we study into nature, the less we are able to account for her peculiarities—we are bewildered. Trees are like men—disease here and there fastens upon the healthiest of the tribe —tomorrow they are gone. Gradually science is learning how to successfully handle some of the diseases which affect mankind and is also furnishing us with preventives, but in the art of horticulture we have scarce made a beginning. We do not even know the cause, or the preventive, or the remedy, for many of the diseases to which vegetation is subject. Spraying is doing much, but the field is still open for a wide range of investigation. We commend the work that is being done by botanists, experiment stations and horticulturists, and we can only hope that as time goes on practical remedies and preventives will be found for all the ills to which flesh and trees are heir.

Prof. Waldron (N. D.): I would say that a large number of cottonwood were nearly killed, and the black walnut did not suffer at all.

Mr. Smith: Is not that unusual?

Prof. Waldron: O, yes.

The President: Were they affected by rust the past summer?

Prof. Waldron: Not badly.

The President: Were they injured the previous winter?

Prof. Waldron: Not so much.

Mr. Smith: How do you account for it?

Prof. Waldron: These cottonwoods grew very rapidly; I could not account for it in any other way.

The President: How large were they?

Prof. Waldron: I had some back of my house six inches through, and some trees on our station grounds killed that were cut back the year before and made a rapid growth. They were not winter-killed, as I could see.

Mr. Smith: How were the roots?

Prof. Waldron: They were all right. Among the apple trees the Hibernal was more affected than any other variety. The wood of the Hibernal turned black. They are unsuccessful on account of

the injury to the root itself. These had been growing there for a number of years.

Mr. C. S. Harrison: Were the cottonwoods native?

Prof. Waldron: They came from the Missouri river at Bismarck. Many of the cottonwood trees that I thought were killed leafed out the first of June, and practically all of our apple trees did not leaf out until the first of June.

Mr. Benjamin: I had the same experience as the first speaker. I had an arbor vitae hedge in front of our house which was scarcely affected except a few side limbs, and one pyramidalis was totally killed to the ground, and two others which were in the same place where the hedge was set out did not suffer at all.

Mr. C. G. Patten (Iowa): I would like to ask Mr. Smith whether he noticed any fungous disease on those white pines he speaks of in the rows that were killed the year before. Were they not affected by any disease?

Mr. Smith: I looked at those trees one day, but did not discover anything wrong.

Mr. Patten: They were trees mixed in with each other.

Mr. Smith: Yes, native trees on either side.

Mr. Patten: I can see no reason why they should be killed unless it is that in the case of all trees of all varieties, even forest trees, one strain is more hardy than another and can endure more under unfavorble conditions. We see that in hard maples and elms when dry seasons come, and I have no doubt there is a variation of the degree of hardiness if there is any injury to the foliage the previous season.

Mr. Geo. H. Whiting (S. D.): In regard to the arbor vitae, my opinion is that what kills it is the arid atmosphere. That is what is the matter with our arbor vitae. The farther west we go, the dryer the atmosphere becomes, and that is where the most damage is done, and the reason they were so severely injured last winter was because we had such an open winter and lots of warm, sunshiny weather. I think the dry atmosphere is what killed our arbor vitae.

Mr. Smith: In answer to that question, I was speaking with a gentleman from New York, and he said there was a great deal of winter-killing of trees in New York, and that is certainly a moist climate.

Mr. Harrison: I think we will find sooner or later that the arbor vitae is very unreliable even in Massachusetts. In Illinois we raised arbor vitae hedges for twenty-five years, and then they were wiped out, and the farther west we go, as Mr. Whiting says, the more unreliable they become. There are certain death waves which will pass through the country and wipe out valuable trees. Such a wave ran through the Rockies, and even the ponderosa was wiped out, a good many were killed and others were injured.

The President: While we are on this subject, I am going to call on Judge Moyer to say something.

Judge L. R. Moyer: I do not know that I can explain why the trees on Pyrus baccata did not do as well last year as trees on ordinary roots, unless the native crab apple, which does not grow to be a large tree on its natural root system, is not large enough to support a large apple tree. A few years ago I secured from Mr. Wedge a large lot of plum trees that were grafted on sand cherry stock. He was feeling very nice toward me, and he sent me the trees on sand cherry stock because he thought they were better on the sand cherry. It was like the Pyrus baccata, it did not have root system enough to support the plum trees, and in a year or two they failed, and that is the reason I think they do not do quite so well. Of course the experiment was small, too small to make it conclusive. The Martha and the Hibernal suffered more than the Wealthy, but having only a few trees it was not a fair test.

Mr. C. E. Older: I merely wish to say that the injury to the arbor vitae Mr. Smith speaks about has affected my hedge every two or three years and comes in so-called death waves. It seems to come when the wind is from the southwest, just as the frost is going out of the trees, and we cannot depend upon a hedge for that reason.

Mr. Elliot: I would like to hear from Mr. Wedge.

Mr. Wedge: I cannot enlighten you in any way. It is a mystery to me from beginning to end. There are so many irregularities in the behavior of everything, even arbor vitae trees, which is so perfect a tree, and which with me has stood for twenty-five years —yet there are occasionally one or two which without any apparent cause fail in some localities. I thought the seed might account for it, but I could not say whether it does or not.

Mr. J. M. Underwood: In the nursery the arbor vitae was not hurt a particle, but the pyramidalis killed back, some a foot and some eighteen inches—below that line they were perfectly healthy. It has seemed to me from the individual failures reported of the arbor vitae and the pyramidalis that they were invariably due to the fact that they had been in unfavorable locations, where, perhaps, they did not have the strong root system they ought to have had. They were planted somewhere, perhaps, where they were too crowded. The pyramidalis Mr. Smith spoke of as being killed was under a strong growing weeping elm, which, in my humble opinion, took too much moisture from the arbor vitae tree, and I do not think it was in a healthy condition. I believe the injury, which was perhaps due to sun-scald or something of that kind, attacked those weak points.

Mr. Harrison: How are the Siberian arbor vitae?

Mr. Underwood: It had no injury done to it except in the case mentioned.

Mr. Harrison: We have some arbor vitae hedges that are as fine as any I have ever seen. They have been planted twenty-five years and have not had a particle of damage done to them. I am not willing to think that the arbor vitae is not a good thing. If it lives only ten years, it is a good thing.

PEDIGREE STRAWBERRY PLANTS.

B. T. HOYT, ST. PAUL.

In preparing this short article on the growing of pedigree strawberry plants, I have not attempted to cover the whole subject of strawberry growing but simply to touch on that part which relates to the pedigree, or life history, of the plants.

In speaking of "pedigree" strawberry plants I mean high grade plants that have been selected for a series of years with the view to improvement. Webster's definition of pedigree, is "1. Lineage; line of ancestors from which a person or tribe descends. 2. An account or register of a line of ancestors." A pedigree plant is not understood to be the same as a pedigree animal, although many of the laws and principles of breeding are practically the same with plants as with animals. The term pedigree is used simply as a means of distinguishing high grade plants, with a known selection, from plants of ordinary breeding.

I believe it is as important for the plant propagator to keep a record of his plants for propagating purposes as it is for the stock breeder to keep a record of his breeding stock. The purpose of the American Breeders' Association is to study the laws of breeding and to promote the improvement of plants and animals by the development of expert methods of breeding. This association is composed of the leading plant and stock breeders all over the country.

Variation in plants is continually going on. No two plants are exactly alike and when planted in good soil and given the best cultivation some are going to outdo the others, and these should be staked. These individual variations are of the greatest importance to the plant breeder, and by selecting these properly a distinct strain may often be produced. New varieties are not often produced in this manner, however, but the best varieties can be greatly improved or at least kept up to a high standard.

In following up a selection each year of only the ideal specimens, the same as ideal ears of corn are selected for the breeding plot, the improvement is usually in proportion to the standard of the plants used for that purpose.

Planting the propagating bed should be done as early as possible in the spring, so as to give the plants as long a season as possible to become established and send out the new runners which are to be sold the following spring—always discard the mother plants when digging.

Great care should be used in setting plants to have the roots well spread out and firmed, after which a suitable harrow cultivator

with pulverizer should be run as near the plants as possible to loosen up the soil to prevent evaporation from the surface. Cultivate after every rain to keep the best soil conditions. As the runners begin to grow the cultivator is closed up and the outside pulverizers taken off.

As fast as the blossoms appear they should be pinched off, and the young runners will then soon start to grow. The propagating beds should be laid out both ways, so as to do as much cross-cultivating as possible early in the season, to get the soil in a mellow

Residence of B. T. Hoyt.

condition to receive the young plants, as the cultivator will be found to leave the soil in better shape to receive the young layers than a crew of men with hoes.

Layer the first runners by hand, filling up the rows as evenly as possible and still not getting the plants too close. The quicker a young runner takes root, the quicker a new one will appear.

Plants must be kept growing and not allowed to crowd one another if the best development is expected. It is a good plan to clip the last runners that appear late in the fall to allow those already set to have all the strength and become better plants.

As soon as the ground freezes in the fall, start covering the propagating beds to prevent the alternate freezing and thawing, which often damages plants. Coarse marsh hay will be found an excellent covering. While strawberry plants may often winter through without covering, it pays to put on a covering every year, even at a large expense.

All of these little details must be carried out to get the best results year after year in the growing of high grade strawberry plants.

Strawberry Field on Fruit Farm of B. T. Hoyt.

Mr. B. M. Tessem: I would like to ask whether plants covered with straw about the first of November will do well. Is that too early?

Mr. Hoyt: I don't think so unless covered too deeply.

Mr. R. A. Wright: How does Mr. Hoyt know that these plants picked out are good breeders and are going to be good yielders? He takes the plants before they fruit, he does not know yet whether they are going to be productive the following year. I would like to know the process by which he figures it out.

Mr. Hoyt: The way that can be overcome is by allowing a few berries to mature on the original plants to see what they are, and if they are not up to the standard throw them out. We propagated from a number of different specimens to get our original plants, which we start in a small way, and as fast as we see that a plant is not up to the standard we throw it out and do not propagate from it any further; so we know when we get our plants started they will produce the proper shaped berries, as near the ideal type as we can get. There are no two exactly the same, but they resemble one another very closely.

Mr. Geo. J. Kellogg (Wis.): How long have you practiced this?

Mr. Hoyt: About ten years.

Mr. R. A. Schutz: You mulch the ground after it is frozen?

Mr. Hoyt: We do not mulch before it is frozen, but as soon after as we can.

Mr. Schutz: Would they not be liable to mould if you mulch them earlier?

Mr. Hoyt: If you put on too much the chances are they might, but we usually cover reasonably early, and we find they go through the winter in nice shape. It is the thawing that hurts them worse than freezing. Last winter quite a number lost their plants in our neighborhood. The ground thawed out about four inches deep at one time in February, and those that were not covered killed out.

Mr. C. S. Harrison (Neb.): How were those that were covered?

Mr. Hoyt: They were all right. We had a few that were not covered. It happened I had some mulching ordered, but the man did not come with it until the day before it froze up, and I put it on in the mud and every plant died out. Those that were covered before came through all right.

Mr. S. D. Richardson: How much do you use, how deep do you cover and how much mulch does it take to the acre?

Mr. Hoyt: We cover the rows deeper than we do between the rows. We cover them over so we can hardly see the plants at all. We aim to hide all the plants, and in that way I should think it would take two or three tons to cover an acre properly.

Mr. Richardson: Do you leave the straw on four inches deep all winter?

Mr. Hoyt: I hardly think it remains four inches thick.

Mr. Prosser: I had a good deal of difficulty with plants smothering when I left the straw on four inches thick. It is a heavy clay soil, and they will not stand it.

Mr. E. M. Sherman (Iowa): What kind of straw do you use?

Mr. Prosser: Oat or wheat straw.

Mr. Hoyt: Coarse or fine?

Mr. Prosser: Just as it comes from the machine.

Mr. Hoyt: I have had some difficulty in covering where a man was careless and threw on a pile at one place six inches deep and covered too lightly at another. It ought to be put on evenly, not over four inches, and they will not be injured by the winter.

Mr. W. J. Moyle (Wis.): Is it not a fact that it pays to keep some varieties over two years, and you get stronger plants to sell the second year?

Mr. Hoyt: I never sell any plants from beds the second year. I never use plants from a bed that has borne fruit.

Mr. Moyle: If you were growing on a large scale I think you would find that the Bubach would not establish itself firmly the first year. The crown is not perfect the first year, and they will give

a far better yield the second year. They are then good, vigorous plants. Such varieties as the Bubach and Crescent have millions of little plants that are too small the first year. It is their nature. If you will examine the crown, you will find they have an individual fruit blossom in center; if you take a Bubach plant and examine it you will find it has half a dozen flower buds in the center. You take young plants of the Brandywine, and you will find that half of them have no flower blossom at all, and that is one reason why some people said this morning the Brandywine was not profitable. It requires age to be established, and at two years old it is wonderfully productive.

Mr. Hoyt: I have had as good a crop of berries the second year as I have had the first where the plants were clean, but where the plants are allowed to become weedy it is cheaper to plow them up.

Mr. Moyle: Referring to cornstalks as a mulch, if we should pile them on the strawberries early in November with these rains we have been having they would all rot. They would settle down on the plants, and the plants would rot. We do not put on mulch to keep the frost out of the ground, but we mulch to retain the frost, and it is not necessary to put on four inches; one and one-half inches is just as satisfactory.

Mr. Henry Husser: Last spring I bought from a man who claimed to raise pedigree plants. They came, and they had hardly any crown on. My wife said there was no use planting them, but I did plant them, and all the plants we had on the place, even those we got from New York and were four days on the road, all grew. Our idea was that if the plants are not advanced a little in the spring, so that they have at least a few leaves, it is not worth while to bother with them.

Mr. Hoyt: On account of the heavy freezing the last two or three winters I have noticed that plants sent out early in the spring did not have the vitality of those that were sent out later after they had made some growth. A larger percentage did better set a little later in the spring.

Mr. A. Brackett: That was on account of the roots being injured. By letting them stand until they get new roots started they will do better. Up in this country strawberries are always hurt more or less in the winter.

Mr. C. C. Hunter: From strong plants that are growing for one year, do you recommend picking the blossoms?

Mr. Hoyt: I do in every case. I have seen where once in a while a plant would escape the boys, and they would set as many as thirty, forty or fifty berries, and before they would become large berries they would become practically stunted.

Mr. A. B. Lyman: In these ten years, have you noticed any marked change in the varieties or in any variety? Is the fruit of any variety different from what it was ten years ago?

Mr. Hoyt: Well, as I told you, in the case of the Brandywine I have noticed quite a difference, I think. The fruit is if anything

better shaped than some of the first specimens seemed to be. At first they seemed to be of various shapes, but now they are more uniform and have more the shape of the Senator Dunlap. They are all of a very even shape. I have also noticed that there seems to be a difference in regard to the soil. I sent a number of plants out to Long Lake, and the man who set them was told by a number of his neighbors that the Brandywine was not good for his section, and he thought he had made a mistake in ordering that variety, but he took them anyway and set them out. He has told me since that in shipping them up the country the men who bought them told him the berries were of better quality than any they had ever received from the Hood river district; and they did not seem to be like the Brandywine raised out in that section. I do not know what the difference was, I am sure, unless there is something in the way of training that would make that difference—in a different selection perhaps. I do not know what other reason could be given for it.

Mr. Brackett: Mr. Hoyt, I see, raises his pedigree strawberry plants like the rest of us do our strawberries. I think it is necessary to define what the words pedigree, ancestry and thoroughbred mean. The dictionary defines pedigree as "known ancestry in a line of registered ancestors." Thoroughbred means from the best breed, as in the horse. Ancestry is defined as our ancestors we pass down from. However, these words all pertain to animals and not to plants. They could not pertain to plants except as plants are grown from seed. Most of our plants are grown from seed or buds, and a plant grown from a bud is not a new production. A bud is a layer, a sprout or a graft, and it is a part of the original plant, and you have therefore no new production. If we get a plant from the seed, it is a new production. It may, or it may not, resemble the parent from which it came. I could refer you to twenty-five or thirty experiment stations that have given this matter of pedigree strawberries a thorough test, and without exception they call it a humbug. Mr. Crawford, of Ohio, one of the largest growers in the United States, has given it the closest study. He procured plants from everywhere in order to make the test thorough. He got plants from some of the oldest beds he could find, some of them twenty years old, and he planted them and cultivated them right alongside of the best pedigree plants so-called he could get in the United States, and the result was that when they came into bearing they were exactly the same. They were no larger and no smaller and were just as productive as the other. That is where this pedigree feature is misleading. It purports to possess something that is not there. It can have no footing whatever unless the plant is grown from the seed, and the parents from which it is grown are known. Mr. Kellogg, of Michigan, was the father of the so-called pedigree strawberries. Mr. Kellogg is dead, but he made a fortune out of the idea. There is this to say in favor of the pedigreed plants, and that is, if anyone has made up his mind to buy them he will

not hold back on account of the price, and if it is double that of the other plants, the sooner he will take his chances.

Mr. Geo. J. Kellogg (Wis.): I went over to Michigan to get some pedigree plants. It is a mighty nice theory, but when you come to put it into practice it does not pan out at all. This strawberry patch over there in Michigan of thirty acres sent out lots of pedigree plants. They may have had some pedigree plants to start out with, but they cannot keep on sending out pedigree plants. I got some of those plants and set them out alongside of my own plants, and I could see no difference.

Mr. Henry Husser: I can endorse what Mr. Kellogg says. I got pedigree plants, and they were no different from any other of the same variety I ever bought. I do not believe in it at all.

Mr. Ole J. Hagen: I have tried this scheme quite thoroughly of planting both pedigreed and non-pedigreed plants for the last two years, and I have found no difference in them. I did not get a single berry from either of them. (Laughter.)

Mr. S. D. Richardson: Two years ago I thought I would try some pedigreed strawberries from Michigan. They failed, and I sent to the other Kellogg in Wisconsin, and the strawberry plants I got from Wisconsin were far ahead of those from Michigan.

Mr. Johannessohn: I got some from both places, and they did equally well.

Mr. W. J. Moyle (Wis.): There is one point that has been overlooked in this discussion. All these old horticulturists will admit that there is one good feature in this matter in that you are able to work up the enthusiasm of the people who buy the pedigreed strawberry plants. They think they have something especially good, better than anybody else, and they give their plants extra care, and in that way Kellogg's pedigree strawberry plants serve a good purpose.

PRUNING RASPBERRIES AND BLACKBERRIES.

The one substantial reason for spring pruning is that the tender blackberries and all the raspberries die back more or less through the winter and if pruned in the fall would have to be pruned again in the spring to remove dead wood. Pruning can be extended over a long time and that is quite a convenience. It can be done in March before growth has begun, or it can be delayed till April when the buds will form an easy indication of the amount of live wood. The wood of bush fruits does not bleed like that of the grape vine, and late pruning does not weaken them. Some growers even wait till the blossoms open in order to measure by the bloom how much wood to leave. And there is good reason in this, for buds do not always form regularly along the cane, and so many inches of wood cannot always be relied on to produce so many berries.

Secretary's Corner.

Present Membership.—The membership of the society has grown with unusual rapidity this year, and at the date of noting this, April 25th, the annual roll stands at 2137. This added to the life roll of 188 makes a total membership of 2325.

A Tribute to the Memory of Frank Yahnke.—Mr. Milton O. Nelson, a Minneapolis member, in a recent letter pays an uncommon tribute to the memory of our departed friend. "The tribute to Mr. Frank Yahnke in your April issue is most inspiring. The uncommon qualities of great hope and self sacrifice strike me as combining in him to a most unusual degree. In my estimation he was a great man and his life a great success. It is due to the fact that such men live and work among us that the world is kept from spoiling. I wouldn't want anything better on this earth than to have a few such men as neighbors."

Accidental Death of H. G. Westman.—Mr. Westman, of Sandstone, Minn., was one of the younger life members of the society. His name was placed on the life roll some three years since. While engaged in the stone-quarry business, he also took an active interest in horticultural pursuits and showed this so strongly that he was made a vice-president of the society for the year 1906. At the last annual meeting he was on the program, as those attending will recall. His death was caused by drowning in the Kettle River on April 9th. Those who had the opportunity of knowing this energetic and useful member of our society will sincerely mourn his loss from our midst.

Horticultural Meeting in the Red River Valley.—Prof. Wm. Robertson, secretary of the Red River Valley Horticultural Society, got the members of that local society and friends together at the school of agriculture of which he is principal, near Crookston, to the number of 150, on March 20th. They listened to a very interesting program made up in large part of local talent, of which there is a great abundance for the purpose. We note that Prof. C. B. Waldron, from Fargo, was there as a visitor and took part in the exercises. The result of this meeting is a resuscitation of the Red River Valley Society, which has been rather dormant for the past two years. We anticipate as a further result of this gathering a stronger organization than in the past even.

The Fruit Breeding Farm.—Now that the state legislature has enacted the law by which a tract of land is to be purchased to be used as a fruit breeding farm in connection with the state experiment station, it is well that our members should take immediate note of it and, having the matter in thought, give the management of the society the benefit of any observations as to location, methods of operation, etc., that may occur to them. In a general way the plan is to purchase a farm of approximately 160 acres, with suitable farm buildings, conveniently located for easy access from the state experiment station and at the same time especially adapted by the character and lay of the soil, location, etc., for orchard purposes. $16,000 has been appropriated for the purchase of such a place, and it ought not to be difficult to find something suitable in all respects for this sum.

THE HONOR ROLL FOR APRIL.—The following members have sent in new members to the society since March 26, up to and including April 24, that being the date when this number of our monthly goes to press.

C. E. Oleson, Perley, 2; R. D. Wilson, Winnipeg, Man., 1; J. N. Peterson, Fergus Falls, 1; L. P. Highmark, West Duluth, 1; J. P. Andrews, Faribault, 2; Andrew Strommer, Wegdahl, 2; S. McAdams, Swea City, Ia., 1; Geo. T. Halbert, Mpls., 1; Geo. W. Strand, Taylor's Falls, 4; Clarence Wedge, Albert Lea, 1; O. M. Agre, Sacred Heart, 1; P. Setzer, Blooming Prairie, 1; M. J. Mosher, Pillsbury, 1; Nicolai Johnson, Glenwood, 1.

FORESTRY SCHOOL AT ITASCA STATE PARK.—Another matter in which the Horticultural Society is interested and which has been spoken of occasionally in our journal is the founding of a demonstration forestry school in Itasca State Park, at the headwaters of the Mississippi River. The state owns a tract of virgin pine forest at that point, which was created into a state park some years since. This park needs continuous care, and the purpose is to combine the operation of a forestry school, under the management of the state university, with the care of the forest in the park. In securing the passage of legislation needed to bring this about, it was necessary to work up sentiment in favor of this new movement in our state, and to this work Prof. Green has given a large part of his leisure time during the past few months. He was successful in securing a host of friends for the measure in the legislature and in securing the passage of the necessary legislation, though the amount asked for was finally cut down somewhat, as it appears in the general appropriation bill. The amount provided, however, is not so small as to cripple the enterprise, and the beginning of what will undoubtedly prove to be one of the most successful forestry schools in America is to be made at Itasca State Park the coming season. The interest that our society has taken in forestry will be further accentuated by the success of this movement. It means a long stride forward for the public school system in the state, of which this forestry school becomes at once a part.

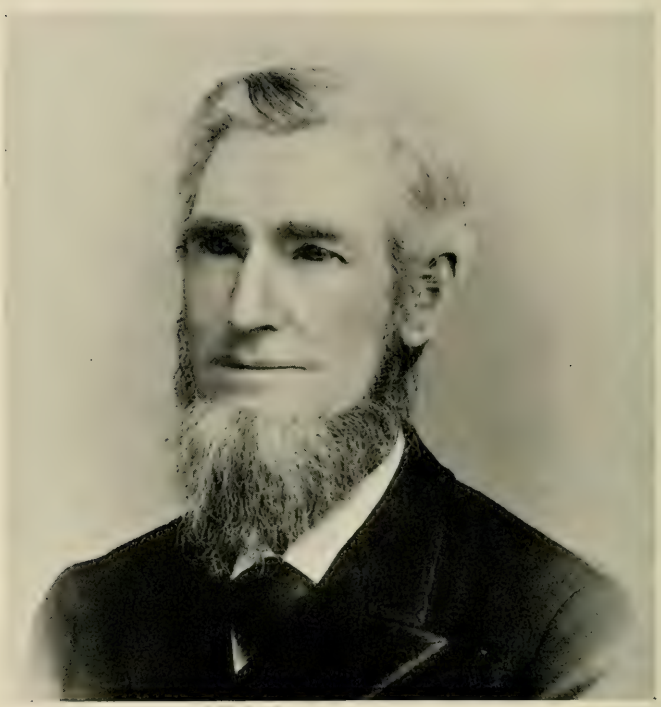
DEATH OF MRS. CHARLOTTE O. VAN CLEVE.—One of the oldest members of the society, dying in her eighty-eighth year, as well as one of the oldest life members, passed away on April 1st, in the person of Mrs. C. O. VanCleve, of Minneapolis. She stood eighth on the list of life members. All of those preceding her on this list having finished their life work here excepting Mr. Wyman Elliot and ex-secretary C. Y. Lacy. She was made an honorary life member in the year 1882, in recognition of her service to the society in the presentation of the results of her observations on the horticulture of the Sandwich Islands. Mrs. Van Cleve was not, at least in later years, an attendant at the meetings of the society, probably on account of her infirmity of deafness, but she always took a great interest in the work of the association and a pardonable pride in her long honorary connection with it. She was said to be the first white child of pure blood born in what is now the state of Wisconsin, her birth occurring at Prairie du Chien, July 1st, 1819. At the age of seventeen, she was married to Lieut. Van Cleve, their early home being made in Cincinnati. It was 1856 when they moved to Minnesota, living the greater part of the time since then in Minneapolis. Mrs. Van Cleve was the mother of twelve children and leaves behind her at her death a large number of grand-children and several great-grand-children. Seven of her

children are still living. No woman in the Northwest has more impressed her life upon this growing community than Mrs. Van Cleve, and notwithstanding her advanced age she will be greatly missed.

Passage of the Fruit Breeding Farm Legislation.—Our members are all familiar with the efforts that have been made to secure from the present state legislature the passage of a bill providing for the purchase of a tract of land suitable for fruit breeding purposes and the permanent maintenance of it, reference having been made to this matter from time to time in the Secretary's Corner and upon other pages of our monthly. While the outcome of these efforts was to those who were more immediately connected with the movement not for a moment in doubt, yet it is a relief to have the matter finally settled, as it was by the passage on Saturday, the 20th of April, by the house, of the bill for the purchase and maintenance of this farm. The state senate passed this bill containing the appropriations some weeks before. When it came to the house it was referred to the committee on appropriations and after a time was reported out from this committee without the necessary appropriations. At the time of its passage in the house however, the appropriations of $16,000 for the purchase of the farm and $2,000 annually for maintenance were inserted in the bill without opposition, which was a special compliment to the society, as we are informed since that other bills that required appropriations to make them effective have not been able to secure these in this way, but only through the omnibus appropriation bill. When the "fruit breeding farm" bill was put upon final passage in the house only one member voted againct it. A little conference with this member a short time afterwards resulted in his asking the house to permit him to change his vote to the affirmative—so that our record stands as heretofore: that all the legislation asked of the state legislature by the horticultural society for a long period of years now has been granted without a dissenting vote. This bill had passed the senate previously by a unanimous vote also.

It was universally recognized in the legislature as a very meritorious measure, and its active supporters among the members were counted by the scores. In securing the passage of this bill credit is due to hundreds of our members who took pains to communicate with the members of the legislature from their districts, so that to our knowledge upwards of a thousand letters were sent to the legislature bearing on this subject. Where so many were deeply interested and did special work to help along, it has not been easy to discriminate, but if any one were to be spoken of especially as working in its behalf it should be the president of our society, Prof. S. B. Green, who was in touch with the movement at all points from its inception. The writer was in the house with him at the time of the final passage of the bill.

We anticipate much practical good from this measure and a largely increased interest on the part of our membership in plant breeding, as well as their material assistance in helping forward the work. The law pertaining as passed, will be found on page sixty-three of the February, 1907, issue of our monthly. As finally enacted the bill is exactly as printed on that and the succeeding page.



WILLIAM SOMERVILLE,
Late of Rochester, Minn.
(See opposite page.)

THE MINNESOTA
HORTICULTURIST.

VOL. 35. JUNE, 1907. No. 6.

In Memoriam.

WILLIAM SOMERVILLE,

ROCHESTER, MINN.

Died October 21, 1906, aged 87 yrs.

After ten years of suffering with a fatal ailment, our friend and brother passed away on Sabbath morning just at dawn, and was at last at rest. He died at the home of his son, L. E. Somerville, in Rochester.

"William Somerville was born in Beaver county, Pa., in the year 1819. He came with his parents to Ripley county, Ind., at sixteen years of age, where he worked at the carpenter's trade for a period of five years. He then bought forty acres of land in the timber and began clearing a farm, adding thereto from time to time until he became the owner of 200 acres. His wife's health becoming impaired, and a change of climate being deemed desirable and to her advantage, he sold his farm and removed to Viola, Olmstead county, Minnesota, in the spring of 1860, purchasing two claims, partly of smooth prairie and partly of grub land. In the spring branch lay twenty apple trees that had been purchased the preceding fall from Mr. A. W. Sias, who was then canvassing in that part of the country for a New York nursery. He grubbed out the hazel brush and set the trees, the varieties being Talmon Sweet, Golden Russet, Wine Sap and one Duchess of Oldenburg. (The last mentioned tree is still alive and in bearing condition.) Being resolved to grow fruit, if possible, he prepared the ground and in 1862 gave Mr. Sias an order for two hundred more trees, including fifty of the Duchess. The latter were set in his orchard in the form of a square, where they still stand in a healthy and thrifty condition. The other varieties have long since disappeared.

"In the winter of 1872-3, he was a member of the state legislature. In the years 1874 and 1875, he was employed by the Hon. L.

B. Hodges as foreman to set trees along the line of the St. Paul & Pacific Railroad, at Willmar, Benson, Morris and other towns along that line.

"Having experimented with Eastern fruit trees and become discouraged with the results, in 1877 he started a small nursery of apple trees and evergreens. Scions were obtained from seedling fruit trees which had withstood previous trying winters, and a small supply was also received from the Agricultural Department. In 1880 an orchard of some 200 trees was set, including a number of Russian varieties. These trees all grew well, but the seedlings were mostly killed by the trying winter of 1883-4. A few trees in the orchard and nursery escaped where well protected on the north by a willow hedge, but the Russian varieties withstood the test, and these still remain in a fruitful condition. Encouraged by this experience, he added thereafter some hundred or more Russian varieties and a limited number of the better varieties of seedlings, and he now has some 2,000 trees. This experimental work he has conducted independent of outside aid, seeking to obtain a few of the best varieties for hardiness of wood and fine quality of fruit, which farmers can set with some degree of certainty."

On Oct. 6, 1842, Mr. Somerville was married to Rachel C. Cunningham, now deceased. Of this union six children were born, five of whom survive him, viz: Luther E., Rochester, Minn.; George W., Sleepy Eye, Minn.; Mrs. M. J. Hillman, Minneapolis; Mrs. Lucina Frenger, Sanford, Florida; Mrs. John N. Rutledge, Stewartville, Minn.

The foregoing quoted sketch of Mr. Somerville's life was published originally in the report of the society for 1895. It speaks only briefly of the services of Mr. Somerville to the society and the horticulture of the state. An examination of the society reports show that while he was one of the charter members, one of the twelve that founded the society, he was not especially prominent in its councils until as late as the year 1889, from which time onwards, until his growing infirmity detained him at home, he was a regular attendant at the meetings and a large contributor to its programs, the reports of the intervening years showing often several articles from his pen in a single year. His services with the Farmers' Institute as lecturer on horticulture for a number of years should be noted especially, and in this work indeed he paved the way largely for his successors in this popular field. Of large stature and animated appearance, he was a striking personality, and in his peculiar way on the platform he vigorously set forth the facts of horticulture, clothing them in striking and impressive language.

In recognition of his notable services to horticulture in the state, in 1898 Mr. Somerville was made an honorary life member of the society. For some years he conducted a society experiment station on his farm at Viola, where he had perhaps the largest collection of varieties of Russian apples in the state. For many years he was one of the largest exhibitors in the fruit department at the state fair, his presence there adding very much to the interest of the horticultural department. The writer had the pleasure of meeting him a number of times after he was unable to attend the annual gatherings, the last time some three years since at Rochester, when it seemed that his undaunted courage and tenacity of life would give him yet many years with us. Mr. Somerville well served his time and day. He is one of the few of that early time to whom we are especially indebted for persistent service that is now bearing large fruitage.—Secy.

THE CHILD AND NATURE STUDY ON THE FARM.

MRS. T. A. HOVERSTAD, DENNISON.

Driving in the country one day our attention was attracted to a meadow lark, one of the most common birds of our Minnesota prairies. In our party was a young lady who had just returned from her graduation at college. She made what was to me a most significant inquiry, for she asked what the name of the bird was, thereby showing an ignorance of bird knowledge. I pondered over this many times. This young lady represents to us that large class whose education is acquired through the medium of books to the exclusion of the book of nature, which has to do with real and living things.

Another incident impressed me also. In conversation with a young lady of our neighborhood reference was made to the pollination of cucumber blossoms by bees. We at once perceived that she knew nothing of the subject of cross-pollination. She manifested so much interest that we took the opportunity to explain the subject to her. This young lady was reared in the country, and it shows to us how we may live in the very atmosphere of nature and yet have eyes shut and ears closed to the wonders and beauties that surround us.

There is an awakening in this line, for we hear much of nature study in the educational world. In many city and village schools a course of nature study is incorporated in their curriculum. However, as yet, the agitation has not ramified to the country schools to any degree.

Does it not seem the irony of fate that this work should begin with the children of brick walls and noisy streets instead of with the children of the country, whose lives are ever in touch with nature? Excellent as the work is that is being done in the public schools, yet it cannot be ideal. Nature study is not adapted to the school-room. It is a study to be conducted in the field, the forest, by the brook or wherever the object of the study exists. If the object is removed to the school-room in the form of specimens, it is then not seen in its proper relations. The country school has the advantage over the city school, as here the teacher may accompany her pupils afield. *However, the farm seems to be the ideal place for this work.* Here the child is continually in contact with nature and can observe her under various conditions. Then, if the parents but become the teacher, nature study may attain to its highest perfection.

Somehow the country seems to be the ideal setting for a child's life. Here are freedom, peace and quiet. Here the child is surrounded by living, growing things in which its soul delights. Such an environment tells for a healthy physical, mental and moral development. But there is needed a wise hand to lead the child into a full enjoyment of these blessings.

We became thoroughly enthused with the nature study idea, and as our life was cast upon a farm with four little ones we determined to do what we could to have the farm yield its fullest measure of blessing to the children. We were utterly unqualified to undertake such a work, as our education in nature had been from books in the school-room, and we knew little of the living objects. But the advice of Prof. Bailey gave a teacher encouraged us to start. This teacher had been considering the subject of nature study work for two years but had not attempted to teach it, as he felt unqualified to do so. Prof. Bailey said, "Begin! Head end, tail end, in the middle, anywhere—but begin!"

Spring inspired us to make the beginning. We took our children and went out doors, depending upon nature herself to suggest the method of procedure. The birds were just returning from the south and were to be seen before the trees put forth their leaves or the plants and insects appeared. We knew but few birds by sight, and at first we were bewildered by the numbers seen and the variety of bird song heard, but we learned to center our attention upon some particular one until we became acquainted with its most characteristic traits. We had Miss Blanchard's "Bird Neighbors," and that helped us to identify the birds, as the name seemed as necessary to the introduction of a bird as to that of a person. We listened to

the songs of the birds, and the children enjoyed imitating them. Then it was ever their delight to have the song interpreted into language. It pleased them so much to hear in the song of the song sparrow, "Maids, maids, hang up you teakettle-ettle, ettle."

Then we watched the birds gathering the material for their nests. The house-wren was busy at a pile of twigs near the house. The swallows were continually sailing over the poultry yards, and now and then we would detect one carrying away a feather in its mouth, and we found the orioles making numerous trips to our yards and carrying away pieces of string they found there. The children

Mrs. Hoverstad and her children.

scattered string about for them and enjoyed the story of the orioles who found a lady's work basket on a veranda and carried away bits of bright-colored yarn which later she found woven into their nest.

Then, too, we found the nests. Hanging from a high branch of a box elder tree was the oriole's nest. Hidden away among some evergreen shrubs was the nest of the chipping sparrows, whose grasshopper song we had so often listened to. The children were pleased with the horse hairs they found lining the nest. How delighted they were with the exquisite little cradle the yellow warblers had made for their babies!

Then there were the eggs of so many different shapes, colors and sizes. In nearly every nest we found one egg that was foreign to the eggs of that nest, and we concluded that they were the eggs of some of the cow-birds that we noticed staying in our poultry yard, for the cow-bird shirks the responsibilities of motherhood.

In the fall we noticed the birds in large flocks, and we told the children of the long journey they were about to take to the southland.

This one season was very rich in the knowledge we gained of birds and their ways. We had a list of over thirty birds, while many had baffled our attempts at identification. The children's list was naturally smaller. Among the birds that had been especially interesting to them was the meadow lark, bobolink, song sparrow, chipping sparrow, red-eyed vireo, oriole, yellow warbler, goldfinch, catbird, red-winged blackbird, cedar bird and especially a little flock of sandpipers.

But the bird with whom we formed the most intimate acquaintance was the meadow lark. Our home was on the prairies, and this afforded us the very best opportunity to observe this bird. It was our delight from day to day in the early spring to listen to the clear, spirited whistle of the male as he sat on the top of some of the small trees that lined our driveway. As soon as he had sounded the last note there came the responding trill of the female from the ground where she seemed to keep up an incessant search in the grass.

Then they disappeared from our notice, but soon again we saw the male on his accustomed perch and noticed the female making numerous trips from our lawn to a point in the field. We knew what had taken place, and we were all interested to watch this new epoch of bird career. The mother bird would come frequently beneath the window where we saw her sink her long bill into the ground and pull up angleworm after angleworm. She would eat a portion of the worm herself but leave about an inch of the thickest part of each worm to take to her little ones. These pieces she would take with her from place to place until she had as many as she could carry in her bill. Then away she flew only to return in a few moments to repeat the quest of food. All the while the father acted as sentry, his post of duty being the top of the same trees, and we often wondered when and where he dined.

Very soon the English sparrow appeared upon the scene. He was very quick to see an opportunity of making a rich haul by means of his wit rather than by the patient, honest labor that the lark was giving. With a sudden dart he would snatch the

piece of worm that the lark had placed on the ground beside her, and flying to a safe distance eat it with great relish. Finally the lark had to fly with each separate worm to her birdlings. On a few occasions we saw the lark's anger aroused, and she would attack the sparrows, when away they would fly like a set of cowards. The lark only received a temporary rest from their persecutions, and at last wherever we saw the lark at work there we would see a flock of sparrows also.

We were filled with a great desire to find the nest of the lark. We noted where she alighted with her worm, and we searched the meadow over and over, but in vain. Finally one evening we tried to secrete ourselves in the grass near the spot. However, we did not escape the father's vigilance, and great was his consternation. As the mother lark started on her homeward trip he met her and together they retreated, evidently to hold a consultation. We remained until darkness was falling. Twice the mother bird had flown to her accustomed spot, only to take alarm and fly away. All became quiet, and we started for home baffled. Great was our surprise when from beneath our feet flew the lark. We marked the spot and next day returned to find four little birds so protected by their mimicry that there was little wonder that the whirr of the mother's wings was needed to reveal to us the nest and birdlings. One egg had remained unhatched, and the contrast between the size of the egg and the birds showed how the little ones had thrived by the mother's unceasing labor.

We next noticed the mother flying to different points in the field, for the birdlings had left the nest. By and by we were attracted by a peculiar bird sound, and watching from whence it came we saw that Mrs. Meadow-lark was taking her brood with her as she searched for food. When she fed a worm to one bird all the others voiced their dissatisfaction by a funny little petulant bird-cry, greatly to the amusement of our children. One thing that impressed my little girl vere much was the meadow-lark's house-cleaning operations, and her question of, why does the lark keep her nest clean? afforded me an opening for an excellent lesson in hygiene.

But the birds did not monopolize our attention. The trees, plants and insects received each a share.

At the very beginning of our work with plants we learned a most valuable lesson. Early in the spring we attempted lessons in germination by planting some beans in boxes. In order to note the root

development we began to pull up the tiny plants, but my little girl protested so sincerely that we yielded to her wish. This revealed to us with what tender love a child may regard even a plant, and we felt the importance of respecting this attitude. More and more we got away from the method of collecting specimens. We were even careful not to tear apart the flowers we gathered in order to learn their parts. We went to the plant and studied it where it grew, and we directed the children's attention to those things that nature herself revealed to the eye. It must be borne in mind that our children were young. The oldest was but six years old when we began this work. Because of their youth we made use of the simplest and commonest things and called their attention to only the most striking features.

Probably the plant that the children received the most enjoyment from was the dandelion. They were interested in the notched leaf. They were pleased with the appearance of the flower-bud, that looked like baby's fist. One day when there was a mass of bloom we went out among the flowers, and there we saw the honey bee, the bumble bee and the butterfly going from blossom to blossom sipping honey dew. We saw how the flower stem lengthened as the seed developed in an apparent effort to place it in a position to catch the breezes. Then there appeared the dainty seed-ball—and what child is there that is not delighted with it! Then, too, there was the individual seed to be seen with its tiny sail spread that the wind might carry it to a new home. The children seemed to regard the wind with a feeling of gratitude as they watched it scattering the seed broadcast.

As the seed was the thing in which the children seemed most interested, we let that be a starting point for a more extended study. We looked for other seeds with sails, and there was the thistle and the milk-weed. Then we sought for other ways nature had provided for the distribution of her seeds.

This caused the children to make observations on their own account. We were very careful to encourage them in this and often stopped in the midst of our work and went with them, that we might give proper attention to their discovery.

In connection with this study we often read or repeated little verses or poems to the children that related to the bird, plant, insect or phenomena of nature under consideration. How this fellowship of nature caused the poem to touch their hearts and enabled them to appreciate its beauty, as they could not had not their hearts

been put into a sympathetic mood by the love they bore the subject! Then, too, the poem broadened their ideas and, we trust, tended to cultivate a taste for good literature.

We also wrote down in a book each evening for the children the interesting things of the day. This stimulated their observation, and as they clothed their observations in language, it fixed the ideas more in their minds, and incidentally it was a good exercise in composition.

It was interesting to note the influence this work had upon the children. It put the children in a sympathetic relation with their surroundings and in a loving communion with nature. It enriched their lives. Each drive or walk was full of expectancy, and what thrills of joy they experienced when some unlooked-for bird came within their vision, or a nest was discovered, or they chanced upon some new flower! We remember with what keen pleasure our little boy saw the first toad of this season, as it was hopping into the garden in the cool of the evening.

Of the cruelties of children we are all aware, but this bit of nature study has made our children respect the lives of God's creation. "Be careful, now, don't hurt it," we overheard our oldest little girl saying to her sister as they watched a caterpillar crawling on the door-step.

The spiders that have found their way into the house are carried outdoors, and my little boy objected even to that, saying, "Let them stay, Mamma, I like to watch them spin their web."

Nature study is a valuable educational factor. We place relatively too high an estimation upon books and the school-room. We have gotten into the habit of shifting the responsibilities of our children's education upon the teachers to the neglect of what should be done in the home.

Nature study follows the natural order of education. It begins the child's education with the things that surround him. Our stock of knowledge of common things should be great. Few of us may travel.

Nature study is studying things and not about things. A child was asked if she had ever seen the great dipper. She replied, "Oh, yes, in my geography." Books are valuable to supplement the child's observations and to extend his knowledge.

As the child observes the objects, he is getting his own ideas, forming his own judgments—in fact, thinking for himself, not accepting what others have observed, not thinking in other people's

thoughts. This tends to originality and lays the foundation for truth.

This study of birds, insects, plants, trees and natural phenomena is the ordinary conception of nature study. But there is another phase of it that we believe to be even of greater value. It is gardening and the care of domestic animals. Here the relation the child sustains to the plant or animal is one of responsibility and caretaking. This responsibility gives rise to the necessity of labor, which has its reward by the growth and development of the plant or animal and, finally, by their contribution to our physical support and pleasure.

Feeding the chickens.

We started the children in gardening by giving them a small plat of our vegetable garden. Here they planted radishes, beans and corn. In poultry culture they were given some setting hens and eggs. The amount of interest and pleasure they manifested in this work was very great, and the amount of time and actual labor they spent was surprising. In their garden work they planted the seeds, weeded and hoed the plants. With poultry they cared for the setting hen, mixed the feed for the chicks, fed them, and saw that they were safe in their coops at night. If there was a storm brewing, you could depend upon it, the children had noticed it before you. More than

once their father had to insist upon their leaving the work of getting the chickens under shelter to him in order to save them from a drenching.

As we joined them in the care of the chickens, we discussed not only the proper care they should give them, but selecting some of the best specimens we directed their attention to the qualities of the birds, such as form, plumage, etc. Very learnedly they talk of shape, color, combs, wattles, earlobes and sickle feathers.

They exhibited more interest in the poultry than in the garden. We attributed this to the greater activity of life the poultry presented. Our little boy insisted on feeding the ducks for, he said, he liked to watch them shake down their food.

But when the vegetables were harvested, and they served them at the table, the beam of satisfaction that appeared on their faces, as each member of the family complimented their success, told very plainly they were repaid for their work.

When our oldest little girl was five years old and the boy three, we had the misfortune of being left without domestic help. At the experiment station where we lived we had as stockman a young man of most sterling character. He suggested taking the children with him to the barn, thereby leaving me free to attend to my household duties. This young man was a graduate of an agricultural college and was giving intelligent care to the animals of the farm.

The children became interested in the work of the barns, and there sprung up between them and the stockman a most beautiful friendship. Just how he interested them so deeply in the stock we do not know, but the love with which they regard horses, cows, pigs, and especially lambs and calves, is truly touching. They spent hours of time currying and brushing the calves, in cutting up vegetables for them and in leading and exercising them, and incidentally exercising themselves. Their happiest moments were with the lambs and calves. The knowledge the children gained of the management of stock was considerable, but we look upon that as the least of the benefits.

They knew each horse and cow by name. They knew the stall in which each animal belonged. They would tell you the mother of each calf, even if the calves were a year old. They lent their aid in getting the cattle in the stalls, they put the feed in the mangers and would even clean the stalls.

It was surprising the amount of useful labor our stockman secured from them each day, not arbitrarily, however, but by gently

leading them to do helpful things until they finally felt that the performance of certain duties belonged to them and that they were invaluable helpers.

Here they learned courage and self-confidence. They had an inward consciousness of the mastery of external things. They laid the foundation of useful labor. To them labor was play. This is ideal labor, labor in which the element of pleasure is the controlling force.

The lessons that our children love best in their readers are the ones that have to do with horses, cows, calves, sheep and lambs. One time in reading from, "In the Child's World," by Miss Poulsson, I read the story called "Silver Knee Buckles." It touched our little girl's heart at once. It is a story of the Revolution. The British soldiers, in one of their raids for food, carried away a cow belonging to a little girl of twelve. She got audience with Lord Cornwallis and in her appeal to him for her cow she says, "I raised that cow myself." This is the climax of the story to my little girl. The responsive thrill that stirs her heart is depicted in her eyes and countenance.

To the children the twenty-third Psalm is full of meaning, "The Lord is my shepherd, I shall not want. He maketh me to lie down in green pastures. He leadeth me beside the still waters." They love the Christ-child story, and they often ask me to tell them the one that has the story of the shepherds in it.

Could these stories make the same impression upon them had they not ministered to the little lambs themselves? Christ is our perfect type of tender love and care. "I am the Good Shepherd. The Good Shepherd layeth down his life for the sheep."

I would suggest the tulip as a money-maker for a girl. At the close of the planting season, the bulbs can be bought at a low price. After December 1st I presume that single early tulips can be had at $3 per 100, for mixed colors. Plant four to the square foot, cover three inches, and next April the bed will be the attraction of the neighborhood. They will be ready to be taken up in June, when there will be as many blooming bulbs as were planted, and twice as many of smaller size. Orders will be taken for a good many, more can be purchased and planted, and the small ones may be planted elsewhere to grow to blooming size. A small stock to begin with, with careful management and love for the work, will increase rapidly and bring quite an income annually. I have done this myself, and see no reason why anyone could not. October is the time to plant tulips, but they can be planted any time in December if the ground is not frozen. M. CRAWFORD.

OBSERVATIONS IN THE SUNFLOWER STATE.

DAVID SECOR, WINNEBAGO.

It is natural for a person interested in horticultural or agricultural pursuits, when traveling about the country, to observe what other people are doing in these special lines. This is educational in a way, and the lessons learned encourage him to greater efforts of achievement. Some persons are found who have spent much time and thought to improve farmer conditions and have secured results beneficial to humanity, but it is surprising how many persons are satisfied to get along in the old ruts and make no effort to beautify their homes and to surround thier families with the comforts and pleasures of life. Both the farm and the village home are too often destitute of shade, ornamental or fruit trees and shrubs, when by a little labor these comforts could be had.

The writer left Minnesota January 15 and arrived in McPherson, Kansas, on January 17, to visit friends and benefit health by spending the winter in a milder climate. McPherson is 180 miles southwest of Kansas City, and in a productive part of the state. The first visit here was made some twenty-three years ago. At that time the country was destitute of trees, and it was generally believed they would not grow and that gardens could not be had not fruit successfully grown, owing to the hot winds that occasionally came from the arid plains to the southwest. But the passing years have caused great changes in the face of nature. Groves have been planted and fruit trees set out, which are in a thriving condition. Street shade trees of elm, soft maple, box elder, cottonwood, hackberry, catalpa and honey locust have been set out, and many are now nice large trees. The street trees and lawn trees have been planted too close, a fault not unusual in starting tree planting, and now cause too dense a shade. They will need thinning out to admit the sun rays, both for health and for comfort.

Kansas in a certain sense is in a transitional period of development, but has the making of a great state. However, climatic conditions vary greatly between the eastern and western parts of the state, owing to altitude and rainfall. At the mouth of the Kansas River the altitude above the sea is 750 feet, and the annual rainfall about forty-five inches, while in the extreme western part of the state the altitude is from 4,000 to 4,400 feet and the average annual rainfall only fifteen inches. This necessitates a different system of both agriculture and horticulture between the extreme east and the extreme west. In this county (McPherson) peaches, apricots, plums, cherries, pears and apples do well, except that pear trees

are subject to blight and there have been failures in planting apple trees not adapted to climatic conditions. Some varieties that are standard in New York, Ohio and Michigan do not flourish well here, where the air is dryer and altitude greater. But other varieties do well, and some trees look as though they would be long lived.

The amount of fruit grown is only sufficient to supply the local demand, and while in some parts of the eastern half of the state there are quite large commercial orchards they are not observable here. But little small fruit is grown in this locality, such as strawberries, raspberries, blackberries, currants and gooseberries. Why this is so is not apparent, but so far as examined it would seem that they would do well. Many of the counties in southern Minnesota, containing less area by five townships than this county, produce much more small fruit and more apples and plums than are grown here. Of course Minnesota cannot compete with Kansas in growing peaches, pears and apricots. One thing is certain, and that is, the horticulturists of Minnesota are more enterprising and doing more to benefit their state than the same class of people are doing for Kansas.

At the time of writing this, March 6, there is no frost in the ground and some planting is being done of oats and corn and in gardens. Soft maple trees are in bloom, the robins singing, and on warm, sunny days the bees are flying out in search of pollen to feed their young. Bees are wintered on their summer stands without protection, and while there are some losses they are mostly in good condition. No protection is given to small fruits, rose bushes and other half-hardy plants and shrubs. The temperature was below zero but a few times during the winter, the lowest being five degrees below. Winter wheat is looking well. No spring wheat is grown here. The market price of wheat is about ten cents a bushel higher at towns in southern Minnesota than here. Alfalfa does well and is cut for hay three or four times a year. But little timothy and clover is grown. For general agricultural purposes Kansas hardly equals and certainly does not surpass Minnesota.

KEEPING YOUNG FOLKS ON THE FARM.

HENRY HUSSER, MINNEISKA.

There is complaint from all over the country that the young people dislike farming and go to town, where they expect shorter work hours, better pay for work and, above all, to get a better chance to attend pleasures of all kind. While only a few succeed and become wealthy and influential in the city, the great majority will be swallowed in by the average laboring class and make a living from hand to mouth and will very seldom be able in their lives to call themselves independent, as almost any earnest farmer gets able to do after he works his farm faithfully and intelligently.

It is therefore the duty of every farmer who needs his young folks at home to keep them there, first, by educating the young folks of the dangers of city life and the vain hopes of success there for a great many and, next, of the great advantages and pleasures of farming by an earnest worker, the healthful occupation in free air and sunlight, the great variation in farm work, which makes the business more admirable than the monotonous work in factory or shop; the independence of the farmer and, above all, a happy old age for the farmer who has not to go begging for an odd job, to make a poor living at that.

But to keep the young folks at home we have to make their state pleasant and happy, we have to give them reasons to love their home place, we have to make our homes not only profitable but also attractive. Work your farms so that at the end of each year you can point to some improvement, so that the children will see the farm is paying, and never grumble to them that farming does not pay. Manage so that the young folks have not to work more than ten hours a day on the average and never more than twelve hours in the busiest season, chores included. If you have reason to correct a child, do it sensibly and explain to them in fair way at once, and don't be cranky with them for a whole day or week. This useless crankiness drives a great many away from home.

Another point, and a point of greatest interest, is: Our children are not given merely to be used as working tools or slaves, but they are given us to raise them to be good Christian, loyal citizens, faithful workers, for which they should be trained to work always with a good zeal and with all earnestness. We should make our children to be partners in the farm business, and we should give them a chance to raise or cultivate something for themselves, to their joy and for the getting of some spending money for themselves. To

do this there are many ways on the farm but no nicer way than to interest a child in horticulture.

Horticulture is an art that is interesting for young and old; it presents new problems to solve at all times; it is enjoyable, interesting, educating and can be made a source of good income. Horticulture is a trade that every one can be proud of—and where is there any business that has brought so much good to mankind as horticulture in producing fruit of all kinds and flowers in profusion? Hence, is not the man that produced an apple like our Wealthy, that pleases thousands of people—not alone children—greater than the hero of the battlefield, whose business is only to destroy and create misery?

So soon as a child gets out of doors and left alone it starts digging in the dirt, it makes gardens and trys to plant trees; it shows a love for flowers and a craving for fruits and vegetables. Here is where we should cultivate this inherited love for nature and give them a garden spot, advise them and help them to make a beautiful surrounding for the house and give them time and proper tools out of the garden, and let them have the money for themselves.

How beautiful could our "bread and butter" state be if every farmer would have a well kept garden for pleasure and utility! But of more interest than a well kept garden would be a fruit orchard to the growing young folks, and when the orchard is bearing let them also have the money for the surplus fruit. There is no farmer in Minnesota that could not afford some land for this purpose, no farmer so poor that he *could not get some* fruit stock.

But we have to take care that the boys do not get disappointed by mistakes. They must have proper advice, and since the majority of the farmers are not able to give it they should become members of our society and get the publications of our agricultural school also and follow the advice therein given, and success will surely follow. Our children like to see what others do, therefore let them go to the fair; it is inspiring and educating. They like to read, to gather knowledge. Subscribe for a half dozen farm papers and magazines, foremost such of our state; avoid all sensational papers, that very often tear down all the good influence of parents and teachers and religious education and, last of all but not the least important, let your sons and daughters come to our horticultural meeting..

SECOND YEAR'S WORK, LAKE CITY WOMAN'S IMPROVEMENT CLUB.

MRS. ANNA B. UNDERWOOD, LAKE CITY.

The object in giving in detail the methods of our flower work with the children is wholly with the hope that other towns and small cities may be induced to inaugurate a similar movement. An enterprise of this kind unites all nationalities and creeds, and all conditions of life. Whatever interests children is sure to delight the parents and draw them together. Even the small villages and school districts will find that all differences will be buried in the common endeavor to make the surroundings attractive.

Our improvement club has been subjected to more or less criticism, which noticeably came from those chary of assistance. We have been urged to aggressive work, to force people to do what they ought to, but we have adhered closely to our original plan, namely, devoting the greater part of our energy to the work with the children. Nearly 300 school children took from one to six packets of seed, at one cent per packet. We purchased a quantity of buttons, which indicated that the wearer was a worker for the flower carnival, and one was given to each child taking the six varieties of seed for its grade. Those wearing the buttons competed for the prizes which were to be given to all those who proved successful in making all six of the varieties grow—also a prize to the three best collections of the six, and also one to the best kept flower garden. A prize was offered for the best bunch of any kind of the twelve varieties of flowers.

Instructions for planting the flowers and caring for them were printed in the papers. In May a committee of ladies was appointed to visit the home of each child, to note the progress it was making, and also to advise it as to care, watering, cultivating, etc. About a week before the carnival this same committee again visited the children to determine who were giving the best care and who were doing all the work possible in their flower beds, and also to tell each child that it was to receive a badge entitling it to free entrance to the hall during the two days.

The morning of the first day of the carnival surprised us with the quantity and quality of the flowers. It was a wonderful improvement over the previous year. The afternoons were well patronized, as the 300 children were present, many of them with their parents. The programs for these were furnished by the children and were enthusiastically received.

To interest the general public premiums were offered for the largest collection of flowers and for the three most artistic bouquets. A prize was offered for the best kept lawn in each ward, to be decided by popular vote. There was so much interest manifested in this feature of our entertainment that we intend to make more of the rivalry between the two wards.

We will offer a prize to the ward having the largest number of well kept lawns, one to the best kept lawn in each ward, and one to the most artistic; also one to the best kept school grounds.

A marked improvement has been shown in public sentiment, as the citizens are beginning to take notice. Two years ago, an untidy barnyard opening upon a sidewalk excited no comment, while

Partial view of grounds about the Chicago, Milwaukee & St. Paul depot at Lake City.

today all such are considered a nuisance and reported to the league, with the urgent request to have it attended to at once.

One of our public meetings in the spring was devoted to thoroly discussing the mosquito and the house fly, and all information elicited with regard to their habits of breeding and tendency to spreading disease was published in our papers.

Our pleasant little park was supplied with several seats placed among the trees, and there never was a day when the weather was pleasant that they were not occupied. One small triangular piece of ground in front of a man's home, commanding a remarkably fine view of Lake Pepin and the bluffs beyond, was supplied with two

benches, this man agreeing to keep watch over them during summer and to house them during winter. It might be well to say that this man received the prize for the best kept lawn in his ward.

The last evening a fine musical program was given, which attracted the adults, and at which time also an opportunity was offered for general remarks, which were quite opportune to the occasion. The receipts in money were satisfactory and will enable us to carry on our work in beautifying our city.

There were about fifty more contestants than for the previous year, and more girls than boys in the whole number. After the age of ten or twelve the average boy, and some girls, are too unsettled mentally and physically to be able to be induced to take an interest in what to them seem trivial things. They are allowed more freedom at home, perhaps more correctly speaking, *from home,* and from that time on whatever detains them within the confines of the home grounds is looked upon as a restriction upon their *personal rights.* After that time everything they can get beyond the home is all that counts in the way of work or play. This condition of mind and thought is not the fault of the child, the blame is wholly with the parents, who are wantonly indifferent or grossly ignorant. Upon the five years after this age depend greatly the weal or woe of adult life.

Although well satisfied with the result of our flower work, our league deems it advisable to carry the work forward on a different plan. The two years' supply of penny seeds has given the children opportunity to save seed with which to continue the work if they desire. We will offer prizes, but allow them to procure seed where they will.

We are after the older people now. It has been interesting to note the change for the better, showing that much can be done by example. Old board fences have been removed, likewise many wooden sidewalks, and this necessitates keeping the lawn trim and tidy.

It is astonishing the amount of interest that is being manifested all over the United States in civic improvement. When we began our work about two years ago, we thought that we were almost pioneers in our state. If one wants to keep abreast with the march of improvement along civic lines, he should join the National Civic League and read their helpful literature sent out so liberally. If I am not mistaken, the American Civic Association, formerly known as "The American Park and Out-Door Association" was organized in Minneapolis in June, 1898, and our Mr. C. M. Loring was the first president thereof. I say "our," for although his efforts may

have been largely confined to Minneapolis, still his influence has been felt throughout the state. For what has been done in one place can be done in a greater or less degree in another. It is surprising how the good work of improvement is gathering in force. In looking over a recent report of the Civic Improvement League, reviewing work of 1905-6, it states that for 1904 Minnesota had fifty-two civic organizations. The year of 1905 chronicled seventy-one. Just think of it!—and probably 1906 will show a hundred or more! Would it not be well to organize these and have a yearly meeting for exchange of experiences and plans? In unity there is strength, and such an association would be of incalculable benefit to the state. Through it necessary laws might be secured that would enable a community to secure needed improvements otherwise impossible.

Listen to the German proverb quoted by Mr. Manning, the landscape artist: "What you would have appear in the nation's life, you must introduce into the public schools."

Just as a matter of interest to our Woman's Auxiliary, I have learned recently that to a woman, more than a generation ago, belongs the honor of having organized the first association to improve the appearance of the town in which she lived, its homes and its schools. This in a small Massachusetts town. (Many, but not all good things come from Massachusetts).

At the present time a strong effort is being made in some states to introduce school gardening. The normal schools of Massachusetts, Illinois and Missouri have school garden courses. It is generally conceded that gardening for children, to be of true educational value, must be connected with the schools. Recognizing the importance of this work for the children, the American Civic Association has added to its other departments one entitled Department of Children's Gardens, the vice-president of which is Dick J. Crosby, Department of Agriculture, Washington, D. C.

Let me quote again from Mr. Manning: "Make home grounds as inviting and convenient *to live in* as home rooms," and again, "The character of a community is indicated by its treatment of public grounds."

The time may come when a community will outline the general architecture of even private buildings, and also the general outline of the lawns as well, and this in order to secure an artistic whole. Artistic results should be the aim of effort as well as the strictly utilitarian. To quote from an article by C. R. Woodruff: "Our municipalities are coming to recognize that the rights of a community are higher and more important that those of the individual, and that the interests of the latter are best subserved through a cul-

tivation, protection and enforcement of the rights and interest of the former." In simpler words, more closely applicable to our own case, we may say that the ignorance and perverted ideas of some individuals should not be allowed to prevent the accomplishment of any project that will benefit the majority of the citizens. A lot owner who persists in making his yard the receptacle for rubbish and refuse to the injury in value of the remainder of a block or neighborhood should come under a specific law forcing him to clean up, if example and precept fail to accomplish the reformation. The law covers nuisances that offend the sense of smell, taste and of hearing, and why not of sight, also?

Flower bed in front of court house in Lake City.

It is difficult to overcome the prejudices of the ignorant against public improvement. A plea for a much needed sidewalk was successfully opposed on the ground of its increasing the amount of city taxation, not taking into consideration the personal comfort, together with the general comfort, and also the increased value of the property. They have "got along well enough all their lives without one, and what is good enough for us is good enough for others."

Our hope for permanent progress lies with the children. From a leaflet just received from the civic association is quoted the following: "When boys' clubs were started by a certain Chicago settlement a few years ago, no one realized that from the membership

of these clubs would be drawn the nucleus of men who today tip the political scales for a whole ward in favor of decent and even creditable municipal government and for aldermen who stand high among the defenders of the people from the insidious encroachment of corruption and private greed, who are looked up to as leaders among progressive men, devoting their attention to solving the problems of administration involved in the movement toward the extension of municipal functions."

Yes, our greatest hope for success lies in educating the children. We should cultivate the out-door habit with them. There is nothing that trains and strengthens their power for observation to such a high degree as to be brought into contact with the varied forms of nature—the study of living things under natural conditions. The open air and the general peacefulness of nature tends to a like condition of mind and soul.

If the intelligent, *reading* parents would only help their children more, not by doing their work for them but by encouraging them to do it themselves, they would be laying the foundation for the ideal citizens of the future. Working hand in hand with them in the garden, much valuable information may be conferred that will be of vast assistance in later years, when they are carrying the added responsibilities of homes of their own, together with those of the community. Talk with them about the soil, about the seeds and plants, about cultivation and fertilization; then about the germination of the seed, the effect of light, heat and moisture; talk with them of the varied habits of growth, of the trailing plants, the climbers, the bush form and the tree type; talk of the insects that cause injury to plant life, and then of the birds that are our friends in lessening their numbers. You will soon be astonished at your own ignorance and find this ignorance on your part an incentive to "post up" by reading the nature books and a half dozen of the hundred or more excellent garden and outdoor magazines. What endless topics for conversation and thought? Home will mean much to children brought up in this way, and your own range of vision will be enlarged in this attempt to keep abreast with the unfolding of their minds.

With the children rests our hope for the future progress of enlightened and true culture, and if we have been blessed with a glimpse of the ideal life, let us impart it to the little ones near us, both through example and precept, and we may then rest assured that the good work will go on after we have laid aside all aggressive work.

Mr. Ole J. Hagen: There is an old song I learned when I first came to this country and which is good for every day. I do not

know that I can give the words exactly, but it ran something like this:

"We are springing to the call
From the east and from the west,
To fill the vacant ranks with a million freemen more."

That is a good addition to what the lady has said.

Mrs. Underwood: Is there anyone in the room who knows of any work of this kind going on in his home town?

Mr. C. C. Dike: There is some work of that kind going on at White Bear. There is a prize given for the best kept front yard and things of that kind.

Rev. S. C. Harrison, (Neb.): In Nebraska great efforts are being made in the interest of children, the boys and girls. A year ago there was a large gathering at Lincoln. Seven hundred children came there and took possession of the town, and a sumptuous banquet was provided for them. I notice there is also an intense interest in park improvement, and the good work is growing. It is like a tidal wave sweeping over the land, and we should help it along all in our power.

Mr. J. M. Underwood: I see we have with us this afternoon Superintendent O. C. Gregg, of the farmers' institute. We know what a grand work the farmers' institute has been doing in this state for many years. We know before these farmers' institutes were held we could hardly buy a pound of butter at any grocery store in the state that was fit to eat. In the town where I lived we paid right along 25 cents for butter that was not fit to eat, but it was the best butter we could buy. Now we can go to any town in the state and buy the choicest butter for 25 cents a pound. We are paying 20 cents a pound for as good butter as any one could wish for. I am willing to say that the credit is due almost entirely to the farmers' institute. I have known considerable of the work they have done in the past years here in Minnesota and of the work that the agricultural school is doing in teaching people how to make good butter. They have taught the farmers of the state how to raise fine hogs, the best of sheep and the choicest cattle, and while the animal industry has been given attention, and for that reason has made wonderful progress, the fact remains that there are hardly five percent of the homes in the state of Minnesota that are in any way adequately protected from the cold blasts of winter or the hot winds of summer. Schoolhouses stand all over the state without a tree about them, not a flower garden in sight, and nothing that is inviting or pleasing to the eyes of the child about the schoolhouse. Now, I want to beg of Mr. Gregg that this winter as they go about the state holding farmers' institutes that they leave out some of the instruction they have been giving in regard to raising cattle, hogs and horses, and put in one winter in teaching people the importance of taking care of their homes, surrounding their homes with windbreaks and shade trees, and then take up this work with the children in school, this nature study that has been talked about here today, and see if the results that will follow such a course will

not be just as valuable through the state as what they have been doing for the animal industry.

Supt. O. C. Gregg: If there has been one heart touched here this afternoon, I can safely say that that one is mine. Please allow me to say that this work has not been neglected. It did me so much good to listen to Mrs. Hoverstad. I remember the times when for week after week that lady stood on the institute platform and talked home, *home*, HOME! Please bear in mind that the superintendent of the institute is not governed by his own will. My place is not to command, but to lead people. I want to say in connection with the Farmers' Institute work that two years ago we started to form organizations of ladies. There was one organization at Lake City, and I want to say that I was compelled to modify the plan that I had in mind, but, as I said before, I am not my own master in this work, and I sincerely regret that the plan I had in view had to be abandoned. I am satisfied that upon better and more careful thought larger liberty will be given, and then I hope to see those who wish and desire that there should be an increase of these ladies' organizations take hold of these various matters that have been outlined and that the work will take root and be continued from year to year.

A few organizations were started, and in some places they did not have the power to sustain the work, and in some other places they simply died. Now, here is a work that I have long been interested in, and my heart is in it. My word is with it, and all the energy I possess I would like to devote to it and shall devote as long as health and strength stay by me—and that is the movement by which we shall consolidate our common schools. The "little red schoolhouse" has become a thing of the past. The common school is the university of the farm. It is for the lack of that that the boys and girls leave the farm and go to town for the purpose of educating themselves. It is for that reason that the farmer leaves his farm to educate his children in a city. The moment he does that he leaves one of the best means by which children can be educated, and that is the farm itself. (Applause.) The very atmosphere of that home is beneficial. The mind is always busily employed, and there is mighty little chance for the devil to get into it. I have been termed liberal. I am glad I stand in a liberal church, and still I am a Methodist. (Applause.) I like to talk in a liberal atmosphere. I do not believe children come into this world mortgaged to the devil. They can just as well go up as go down, and I believe a little better. That is why I believe in the school and in the consolidation of the schools where you can have grades and where you can have children educated as they should be in farmers' homes. I hope you will continue with this work. My heart and my mind are in any movement that tends to make better and purer and safer the homes of the country and especially the homes of Minnesota. (Applause.)

Mr. Underwood: I am satisfied, Madam President, that Mr. Gregg's heart is in it. Now, I want him to come here a year from now and tell us that at every institute that has been held one session was given over to the improvement of school grounds and the home. (Applause.)

RELATION OF EARLY MATURITY TO HARDINESS IN TREES.

PROF. R. A. EMERSON, UNIVERSITY OF NEBRASKA, LINCOLN, NEB.

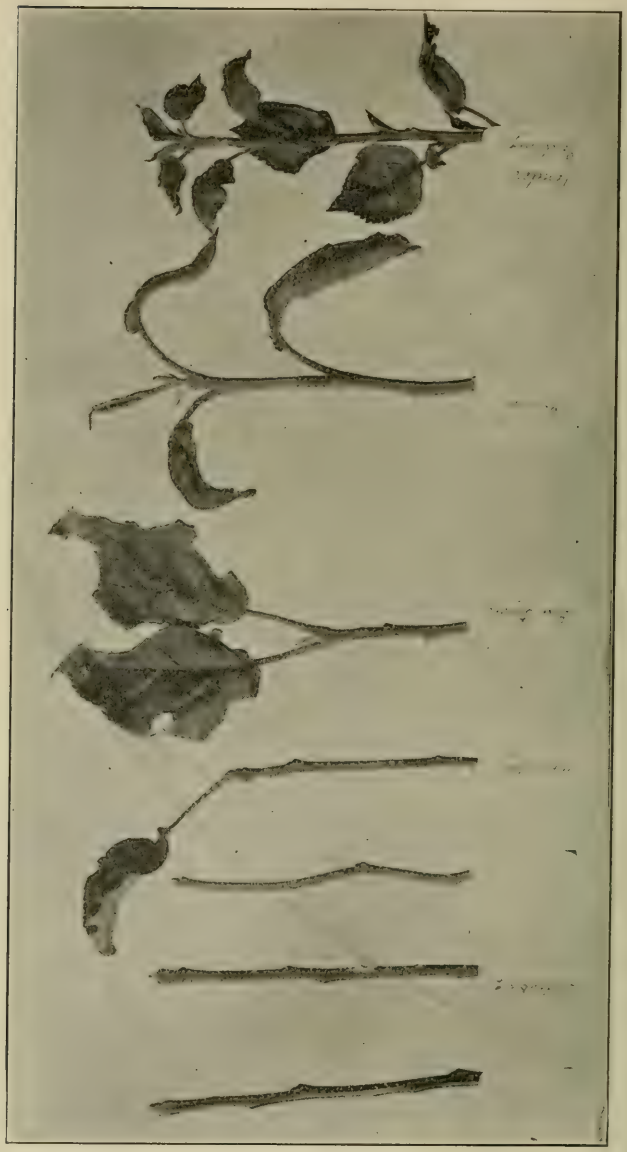
That there is a close relation between early maturing and hardiness is well known. Every one knows that a tree might be killed by a light freeze in June, though it had withstood the extreme cold of the preceding winter. I do not want it understood that I consider lack of maturity the only cause of winter injury. Some plants are constitutionally hardier than others of the same degree of maturity. For instance, beans and peas behave very differently toward frost, the one being killed and the other uninjured, though both may be immature and growing rapidly.

Before calling your attention to some of the ways in which a knowledge of the relations of early maturity to hardiness can be made use of by the practical horticulturist, I desire to give you a few illustrations of this relation.

In the group of plants to which plums and peaches belong, some species are hardier than others, and some ripen their wood earlier than others, but is there any connection between these two facts? The peach is an extremely late grower and is not hardy. The Chickasaw plums mature their wood fairly early and are fairly hardy; the wild plums of the northwest stop growing early and spend the whole autumn in maturing their tissues, and you all know that the native plums are ironclad in hardiness.

The same thing holds true for varieties of apples. The Whitney crab in Nebraska nurseries stops making length growth in July, and all the warm weather or rains of autumn cannot induce it to make a second growth. The Oldenburg stops growing almost as soon, but will sometimes make a small second growth. I need not remind you of the hardiness of the Whitney crab, nor tell you that the Oldenburg is only slightly less hardy. The Wealthy and Northwestern Greenings are somewhat slower in maturing their summer's growth, and, while hardy, they will, nevertheless, not stand the trying conditions the Whitney or Oldenburg will endure. Ben Davis, Winesap and many other varieties mature their wood fairly well and with us in Nebraska are found hardy, yet they are injured some winters. Grimes' Golden is still later in maturing, and one year old nursery trees of Grimes' are often killed to the snow line, even in southeastern Nebraska.

All of you know that young seedlings or grafts are winter injured much more frequently than older trees of the same sort, providing the trees are not so old as to be feeble. It only remains to note that



Relative maturity of twigs of different varieties of apple on December 14, 1904.
From left to right, Whitney, Oldenburg, Prairie crab, Wealthy, Ben Davis, Grimes, tender seedling.

the young tree grows more vigorously and grows later in the fall than the old one.

In Nebraska, peach trees are rarely planted on low ground, but are put on hillsides or on high land. Our planters have learned from experience that peach trees will not survive our winters on low land, or if the trees survive the fruit buds will be killed. Now, it may be a little colder in low places than on high sites, but low land is not usually so much exposed to the cold winds of winter as high land. The real reason why peaches winter-kill in low protected places is that they grow too late in such situations and do not mature their wood properly before winter comes on.

At the Nebraska Experiment Station, we have a very interesting collection of black walnut trees from seed grown in various localities, from Florida to Canada and from Vermont to California. The trees from northern seed stop growing long before those from southern seed. The trees from South Dakota seed, one fall, were bare of leaves nearly a month before California and Oklahoma trees shed their leaves. The Nebraska trees were not far behind, but the trees from seed obtained from North Carolina, South Carolina and Georgia shed their leaves in readiness for winter after the Nebraska trees had been ready a month and the South Dakota trees had been waiting six weeks. But the important thing for us is the fact that the trees from northern seed, and the trees that ripen their wood early, have never been injured by any winter since the seed was planted, some nine years ago. The trees from southern seed on the other hand, the trees that grow late in the fall, have killed back somewhat even in the moderate winters, and in several winters some of them have been killed nearly to the ground.

Now how can we make use of this relation between early maturity and hardiness? In the first place, we can select hardy varieties by choosing the ones that ripen early. In the case of new varieties received for trial, or in testing seedlings, we can tell fairly well from the behavior of the trees during their first and second years in the nursery whether they will prove hardy or not. Just plant the apple seedling or grafts of the new apple along with a few Whitney, Oldenburg, Wealthy, Ben Davis and Grimes' Golden, note carefully during summer and fall the time the growth stops in case of the new variety as compared with the standard varieties, and you have at once a fair idea of how hardy your new sort is.

We can apply the same tests in a way to forest tree seedlings, but it is not so important with them. In getting seed for forest trees or, in fact, any tree or shrub that comes true from seed, get

Winter injury to black walnut trees grown from seed obtained in various localities. (1) Seed from South Dakota, (2) Georgia, (3) Nebraska, (4) South Carolina. (a) and (b) injury in winter of 1902-3. (c), (d), (e), (f) and (g), injury in winter of 1903-4.

seed from trees as near home as possible. If you do this you will be getting seed from trees that have accustomed themselves to the length of your seasons, trees that stop growing at the right time and that, therefore, are hardy.

I might add in this connection that the same rules do not hold for fruit trees or, probably, any other kind of trees or shrubs not propagated by seed. Several years ago, I secured scions of four varieties of apples from some fifteen or sixteen different states, including northern and southern, eastern and western states. The varieties were Oldenburg, Red Astrachan, Ben Davis and Red June, all standard varieties, representing various degrees of hardiness. The scions were taken in each case from old trees or from trees that had been propagated in that particular place for many years. The trees from all the different localities were grown side by side in our nursery, and there was, of course, a very noticeable difference in time of maturing between the different varieties, but I could find no appreciable difference in the time of ripening between the various lots of any one variety. The Red June ripened as early as the same variety from the south. The Oldenburg from the south had not acquired habits of late growth. Now this does not mean that fruit trees propagated exclusively by budding or grafting can never adapt themselves to the new conditions of any region into which they may be taken. Perhaps they might do this in time, but the probability of any change in any ordinary length of time is so small that it can be disregarded. It is perhaps possible that a tree growing in a northwestern nursery may be a trifle better able to withstand our dry conditions when first set in the orchard, but once my Oldenburg apple has got to growing I would not care whether it was propagated east, west, north or south. There are very good reasons for patronizing home nurseries, but the adaptation of home-grown fruit trees to home conditions is not one of them. It is almost wholly a matter of variety.

There are other ways in which we can make use of the relation of early maturity to hardiness. We can often bring about conditions that will favor early maturity. Plant the more tender things on high land, where they will stop growing early in the fall. In the case of irrigated land, withhold water during late summer. Avoid over-fertilizing the land, especially with nitrogenous manure. Practice systematic pruning so as not to excite an over-vigorous growth at any time. Stop cultivating and grow a cover crop in the orchard in the late summer to dry the ground somewhat and make the trees ripen their wood. The value of this for peaches has been shown be-

yond dispute at the Nebraska Experiment Station. In regions of very scanty fall rains, the late summer cover crop may be found to leave the ground too dry during winter, but at the Nebraska Station the ground under the cover has held more moisture during the winter than bare ground. In short, where hardiness is of prime importance, we must be content with a rather slow, well matured growth.

There is one other point in connection with this matter that I would call your attention to, not because we can make any use of it but, rather, on account of the fact that it is really an obstacle to our efforts. I refer to the relation between early maturing of wood and early ripening of fruit in apples. You horticulturists of Minnesota are leading the world in the effort to produce a hardy, late-keeping winter apple. Your effort is worthy of success, and it is to be hoped that you will succeed early in accomplishing what you have under-

Peach twigs showing (1) severe winter injury where given late fall cultivation, and (2) very slight injury where a cover-crop was grown the fall before.

taken. The result you are striving after will be of the greatest value, not only to Minnesota but to the whole northwest. It should not, and I am sure will not, discourage you to hear me say that you have an extremely difficult problem. It will help you rather than hinder, it seems to me, to understand beforehand the difficulty to be overcome. You know it is difficult to get a hardy, late-keeping apple. If this were not true, we should have had apples of that sort long ago, and it would not now be necessary for your society to offer a thousand-dollar prize for such an apple. But why is it not just as easy to produce a hardy late apple as a hardy early one? It is simply because there is a sort of correlation in apples between early ripening of fruit, with accompanying poor keeping qualities, on the

one hand, and early maturing of the wood, hardiness, on the other. The tree that ripens its wood very early and is on that account hardy, is very apt also to ripen its fruit fairly early and is therefore a summer or fall apple. True, this correlation I have mentioned, this connection between early ripening of fruit and early maturing of wood is not absolute. If it were, there would be little hope of getting what you are striving for. We know of summer apples that ripen their wood late and that are therefore tender, and we may expect that some time we shall have the other combination—a tree that ripens its fruit late and its wood early. Unless we do get the combination, unless we can break the correlation between early maturing of wood and early ripening of fruit, we will not have the much desired late-ripening, late-keeping apple that is ironclad in hardiness.

Mr. A. B. Lyman: I would like to make one point in discussing this subject. A party asked me the other day if the same apple tree, the Duchess, one propagated in Texas and the other in Minnesota would be the same. I stated there would be a difference in the root, and my idea is that many of our Minnesota nurserymen are attempting to grow seedlings not adapted to our Minnesota conditions.

Prof. Waldron: Have you ever made the experiment of using potash to hasten the maturity of trees? They use it in Michigan for their peach trees. Once in five or six years they are injured by the winter, and we thought by using plenty of potash it would hasten the maturity of the trees so they would become more hardy.

Prof. Emerson: I thought I could get more hardiness and tried potash, but did not get any results. I applied potash to some peach trees and nitrate to others, but I saw no difference whatever. The land was so rich where these trees were that they grew too rapidly in the fall, and I think that is the trouble, anyway. I did not see any difference from the use of potash. I used potash in some cases, and nitrogen in others, three or four times, and I could not see that it made any difference.

Mr. A. J. Philips: We have been talking about children, and Mr. Wedge asked me to tell a little story which he heard me tell. A mother put her little boy to bed, and after a while, "Ma, bring me up some water." The mother said "No, you had some water before you went to bed. Now don't ask again."

In five minutes she again heard, "Ma, bring me up some water." Mother said, "If you call for water again, I will come up and spank you." It was quiet for a few moments, and then she again heard him call, "Ma, when you come up to spank me, will you bring me some water?"

RAISING FLOWERING PLANTS FROM SEED.

CHAS. RIXON, ST. LOUIS PARK.

(Presented at Annual Meeting, Minnesota Rose Society.)

I am a market gardener; and along with the rest of that guild raise some flowers commercially, such as pansies, verbenas, geraniums, asters, etc., and we do it very successfully, probably because we have more space, do not have to force them so and can give them better culture than the professional florist.

As gardeners, we have to adopt every conceivable method to get our plants into the ground early and in good condition, to meet the competition of the shipper and of one another. Often we "get there" too early—but we have another lot on hand if the first lot fails. To illustrate how carefully we have to watch these things: The Brooklyn gardeners who raise the finest melons to be had plant them early, plant them again in four or five days and still again a few days later, all in the same hill, and then when the late frost comes they can lie in bed Sunday morning—the only morning a gardener can lie—and think there is another crop growing just under the surface.

So with flowers. The winters here are long, and the summers are all too short to crowd in all we want, and we have learned to forstall the late spring weather by having a great many varieties growing while we wait. The pansies and verbenas can be in full blossom when the old ladies first feel like digging in the dirt, the salvias, asters, morning glories, etc., can be strong, vigorous plants, well advanced, and the hollyhocks, delphiniums, and many other biennials and perennials, made to bloom the first season. If one has a greenhouse—and I don't know how I ever could live now without one—this is an easy matter, but amateurs can raise a limited number in boxes in the sunny windows of the home.

We must be sure of good seed if we want good plants. Nothing is more disappointing to the amateur florist than to find after carefully raising a choice lot of plants to the time of flowering that they are not true to name, or even that the seed is not fertile, when it is too late to procure more. In buying seed I have learned to get them of dealers who have the best reputation and then to get only the best they have. In getting those that have several varieties I buy the separate kinds and make my own mixture rather than take the seedman's mixture. The temptation is usually too strong to resist to put all the old seed and those of unsatisfactory quality into the mixture. Any way I would rather have a few kinds of the very

best. I grow every year a couple of thousand dozen of pansies for the trade. I always preserve my list of kinds, the amount paid and the amount sown, and when my pansies are in the flush of their beauty then I make my list for the following year, discarding the undesirable, adding new desirable kinds (for I test a few new kinds each year) and readjusting the quantity of each, so as to have only the very best collection possible. And it pays, for I get the tip top price, and they rarely go begging. It is also a good thing to do, to test seeds for virility when one has facilities for so doing. In gardening it is almost an absolute necessity with many varieties.

In sowing and raising the plants, my method with pansies for the most part will do for all the other kinds of flowers I have raised. (I mean those I have started indoors so as to have the plants ready for transplanting to the open ground.) I have my dirt just moist enough to work nicely, having put it through a sieve with meshes about six to the inch. A sieve don't cost much and is almost indispensable. By making a box four inches deep and anywhere from twelve to eighteen inches square and making the bottom of galvanized wire netting, a good one is obtained.

I am very careful not to have my dirt too wet, it packs and gets hard afterward. I level the surface and firm it with a piece of planed board; then sow my seed, press them into the soil and cover with sifted sand, about the consistency of Indian meal, such as is used for cooking. I put on the sand about one-eighth to one-fourth of an inch deep, according to the size of the seed. I have read that flower seed should be covered to a depth about the thickness of the seed. That seems to me queer advice, for many seeds are from one thirty-second to one-sixteenth of an inch in diameter. By using sand more can be used, the seeds will easily come through it, and if planted thickly will not raise the surface in a body, a little jar or a light sprinkling settling the sand about the roots, and they do nicely.

I water them with warm water—130 to 140 deg. is none to warm. I put it on with a very fine rose, so as not to wash out the seed, and am very careful not to let them get dry till the plants appear above the surface, for if they get very dry while germinating they are "all in," so to speak.

I keep them quite warm, especially in the sunshine—for it's in the sunshine I try to have them. Next to good soil, sunshine makes better plants than anything else. A little shading for some plants is all right in the middle of the day just as they are coming up, but dampness has killed more plants for me ten to one than heat or sunshine.

I am careful not to wet the soil at any time to the point of saturation and also not to sprinkle on damp, dull days.

I sow about 1,000 seeds to the square foot. It's pretty thick, but it saves lots of space and handling if sown in boxes, and I transplant as soon as rootlets begin to grow on the main or tap root, putting them about an inch apart regularly in rows, so as to easily tell at any time the number of plants on hand.

I keep them cooler and drier after transplanting, watering thoroughly when they get dry, and only when they get dry. Freezing will not hurt pansies if there is no draft, but a freezing wind will kill them or any other plant while growing inside. If they do freeze let them go; as the temperature rises, they will come out all right.

When they begin to crowd, my cold frames are ready, and I transplant into them, where they remain till they blossom, which is about the last of April, when they are ready for market. Pansies so raised are strong and vigorous and can be put out into beds where one can get the good of them before the hot weather comes on to spoil them.

I have given my method in detail because on very small things often depends success, and I know these are good general directions for raising small plants.

I sow pansy seed in January, verbenas I sow a little earlier than pansies, but treat them about the same, except I keep them always warm—freezing won't do to harden them. They are impatient of the cold, though they will blossom in the fall till snow comes. They must be potted in two-and-a-half or three-inch pots and stay in the house till they blossom or are put outside in suitable weather.

A few pots ranging in size from two to four inches are exceedingly fine to put plants into a few weeks before they are put out, especially if, like verbenas, their roots are long and straggling. One can transfer them from pots to beds without disturbing the roots if thoroughly watered first.

There is a wide range in the time that the seeds of different plants should be sown Not having experience with very many kinds myself, I sought the advice of our worthy secretary and will give the information as she gave it me. Hollyhocks, seedling dahlias and marguerite carnations should be sown by the middle of February. Pyretheum, gaillardias, Shasta daisies, platycodon, delphiniums, Iceland and oriental poppies, should wait till first of March. Sown this early, all these may be had in bloom the first season.

Digitalis, canterbury bells, cereopsis lanceolata and columbine may be sown out of doors and transplanted in the fall to where they will stand, as they will not bloom the first year. Of the annuals, salpiglossis, dianthus, pinks, everlastings, moon flowers, morning glories, caliopsis, snap dragon, phlox drum., petunias, lobelia, sweet alyssum and ageratum may be sown about the 20th of March, with asters a little later. Poppies, early cosmos, centaurea, portulacca and nasturtiums do better sown where they are to stand. I can't give them all, for their name is legion, but flower-lovers will go on adding to their lists as they gain experience, using one list sometimes and sometimes another, but always making the home attractive.

One word about getting "pointers," and I am done. We don't go after them enough where they are. We can learn as much in no other way as by seeing the other fellow at his work. As a gardener I have learned more in two minutes with my two eyes than by reading up the subject a whole evening or, I was going to say, listening to reading of papers a half-day. I remember once going into a competitor's greenhouse, and in five minutes I had what was worth $25 spot cash to me inside of a week, and I didn't steal it either. That same has been worth money to me every year since. The sum wasn't much, but it will pay my dues to the rose or to the horticultural society the rest of my natural life.

For the person desiring to raise watermelons for his own use, get a solid block, 6x8 inches, 10 inches high or long, or make a box of same size. Determining location of hills, pulverize the soil, dig a hole 4 inches, or such a matter, deep, put in about a pint of thoroughly mixed refined hen manure, cover with 2 inches of soil, put on this the same quantity of good ashes, cover an inch or more with soil, put box over, pull dirt up around it and tamp it down.

Now remove box, sow your seed, and put on top of hole an 8x10-inch glass, giving a slant southward 10 degrees or so. You can put the hills where the vines can run over unsightly places. Water after the plants are nicely out of ground. When they are several inches high, remove the glass on some pleasant day and level the mound.

You can now water liberally. The water soaking through ashes, reaching the manure, liberates the ammonia. When the vines attain a length of 5 or 6 feet, cut off the ends.

Summer Meeting

OF THE

Minnesota State Horticultural Society,

1907.

The summer meeting of the society will be held as usual, in Armory Hall, State Experiment Station, St. Anthony Park, Minn., on Tuesday, the 2nd of July. This date has been selected for the purpose of holding the meeting at the time of the height of the strawberry season in the vicinity of the Twin Cities, which will still give opportunity for the exhibit of late ripening varieties from points south of here and early ripening varieties from points north. The usual large premiums for the exhibit of this fruit are again offered.

Exhibits of green currants and gooseberries are also asked for, and premiums offered for them. Every variety exhibited should be carefully labeled so that proper comparisons may be made. A large exhibit of roses and peonies is also desired, and it is hoped the exhibit may not be confined to one or two of the larger growers. Let each member attending who has flowers, even if of not more than one variety of roses or peonies, etc., bring that one kind to the meeting and thus participate in a practical way in the interest of the exhibit. Please note the change from past years in the method of offering premiums for exhibits of perennial flowers. Each variety may be shown by itself, and separate prizes will be paid therefor. This change will increase the interest in this class of exhibits.

There is more of interest than ever at the experiment station to attract the attention of our members; the new movement in the way of experimentation in plant breeding should be particularly noted. Plan to be on the grounds early in the day and spend the forenoon in looking over what is being done with the officials who have charge of the work there, a number of whom will be on hand to escort parties about the place.

A basket lunch will be spread in Armory Hall at 12:30 o'clock, which is for members of the society and adult members of their families or accompanying friends, and all who take part in this function are expected to contribute towards it, as this is the only way in which the spread can be prepared. Strawberries will be furnished for the table from those presented for exhibition after the judging is completed. All those taking seats at the tables **must be provided with tickets,** which can be obtained by members for themselves and accompanying friends from a committee in the hall who will be known by their wearing the society badge. Any present who are not members of the society may become such for the current year by the payment of $1.00 annual fee to Secretary Latham, or of $10.00 for a life membership.

The afternoon session will begin at 2 o'clock and end at 3:30. It will be in large measure an impromptu program and to some degree at least in the nature of object lessons with the fruits and flowers exhibited at the meeting.

Every member and friend is urged to attend this meeting. A lively and helpful time may be expected. A question box will be provided for any who would like to take advantage of this method of securing information. The experience of so many years giving us invariably a pleasant day makes us almost ready to insure ideal summer weather for this occasion.

HOW TO REACH THE GROUNDS.

Take the Como-Interurban electric car either in St. Paul or Minneapolis, and get off at Commonwealth avenue, where carriages will be found waiting to carry the visitors to the grounds, one-half mile distant, from 9:30 to 1:30 p. m.

Do NOT take the Interurban car, but TAKE the "Como-Harriet" car.

SAMUEL B. GREEN, President,
St. Anthony Park.

A. W. LATHAM, Secretary,
207 Kasota Block, Minneapolis.

PREMIUM LIST.

All exhibits must be entered with the secretary and in place by 11:30 a. m. to be entitled to compete for premiums. No entries can be accepted after this hour.

Exhibitors competing must be members of this society and the growers of the articles exhibited, which must have been grown in Minnesota and be correctly labeled.

Fruits and flowers shown become the property of the association and will be used at the mid-day lunch.

N. B.—At the afternoon session exhibitors, in all classes, may be called upon to talk about the articles exhibited, describing them, giving methods of cultivation, etc., using the articles themselves as object lessons.

MAKE ENTRIES BEFOREHAND.

All probable exhibitors are urged to send to the secretary at once their lists of entries that labels may be prepared beforehand. The large number of entries made at the summer meeting makes it almost impossible to get clerical work done in time for the judging when the making of entries is put off until the exhibits are brought to the meeting. Please make these entries promptly with the Secretary **NOW**, and if by any unforeseen cause your exhibits should not be shown no harm is done.

FLOWERS.

	1st prem.	2nd prem.
Each named variety of out-door roses, six blooms	$ .50	$ .25
Each named variety of peonies, five blooms	.50	.25
Each variety of perennial flowers, in separate bouquet	.50	.25

STRAWBERRIES.

One quart of each variety shown.

	1st prem.	2nd prem	3d prem.	4th prem.
Collection of strawberries	$5.00	$4.00	$3.00	$2.00
Each named variety of strawberries.	.75	.50	.25	
Seedling strawberry never having received a premium from this society	3.00	2.00	1.00	

APPLES.

(Not kept in cold storage.)

	1st prem.	2nd prem.
Best plate of any named variety of apples (of average size and in good condition)	$1.00	$ .50
Plate of seedling apples	2.00	1.00

CURRANTS AND GOOSEBERRIES.

One quart of each variety shown and branch of same with fruit and leaves.

	1st prem.	2nd prem.
Each named variety of currants	$ .50	$ .25
Each named variety of gooseberries	.50	.25
Seedling currant	1.00	.50
Seedling gooseberry	1.00	.50

Secretary's Corner.

Question about the Peerless.—On what soil and what location does the Peerless apple give the best account of itself? This is a question asked by one of our members. It being a fact that the Peerless does very well in some places, if any one can answer this question with definiteness, information much to be desired will be furnished in the reply. Brief answers to this may be published in Secretary's Corner.

A Late Summer Meeting.—Attention is called to the notice of the summer meeting appearing in this number. The date for this meeting has never before been set so late, and at this writing it is even uncertain whether the strawberry crop will be at its best on the date noted. A late season, however, does not necessarily mean a poor season in the end, and we are hopeful that that will be the result in this case.

"Harrison on the Peony."—This is the title of a booklet of sixty-four pages just issued by C. S. Harrison, the enthusiastic writer and practical grower of the peony and other floral products adapted to the Northwest. It will be found a very comprehensive treatise on the subject and well worth a place in the library of every person interested in this flower. The list of named varieties described is especially complete. As usual with Mr. Harrison's writings, its peculiarly brilliant style adds much to the interest of the book.

Comparative Test of Dust and Liquid Spray.—The state entomologist, Prof. F. L. Washburn, largely at the request of several members of the horticultural society, is inaugurating a series of careful experiments on the grounds of the experiment station to test the comparative merits of dust spray and liquid spray, about which there is much controversy. He feels that at the end of the season he will be in a position to make accurate and exhaustive statements regarding the merits of the two processes and comparative cost of each.

The American Pomological Society will meet in 31st session on James town Exposition grounds September 24-26. The preliminary announcement calls attention to the displays of fruits from northeast and southeast, the expected attendance of prominent men from abroad, the reduced rates by water and rail, and the special facilities offered by the exposition. Two sessions only will be held each day, so as to leave the evenings free. Papers and discussions will be centered on a few important topics. Wilder medal awards will be made for meritorious new fruits and regional collections

A Prolific Seedling Strawberry.—Mr. A. Brackett, of Excelsior, reports planting an acre of Prof. Hansen's new hardy seedling strawberry, which is wintering perfectly without protection. That this new variety is exceedingly prolific may be judged from the fact that the plants to set this acre were grown as runners from fifty plants received from Prof Hansen a year ago this spring. Mr. Brackett has not fruited this new variety yet, but understands the fruit, while of good quality, to be of inferior size. If it is hardy enough to winter without protection for home use, something in the way of size can be overlooked.

Burning of Our Reports.—The last lot of 200 reports of this society for 1906 were destroyed by fire at the printers a short time since. This puts the society in such shape as to be unable to furnish any longer to members a copy of the last report. If you have not already received one, please save the magazines of the year before, and in this way you will be able to keep your file, as the bound volume of 1906 contains, with a small amount of some other matter, the magazines of that year. We hope that none of the members who have as yet not renewed will fail to do so on account of this loss which is indeed a most unfortunate one for the society.

Fruit Outlook June 1st.—No special reports have been called for by this office at the date mentioned on account of fruit trees not yet being in blossom generally in the state. It would appear that there is some injury to strawberry beds, shown by the partial winter-killing of many roots. Red raspberries also in some cases show serious injury to the canes. As near as can be judged now, fruit trees of all hardy kinds are in a very promising condition. With plenty of fruit buds in sight, and with favorable conditions from now on, it may be that Minnesota will have a considerable share in supplying the fruit needed to take the place of that irrevocably lost for this season in the orchards of Missouri, Kansas and the neighboring states.

New Life Members.—Since the last annual report of the secretary made at the late annual meeting of the society, a number of life members have been added to our roll as follows:

D. W. C. Ruff, St. Paul.
Frank Boushka, Biscay.
Peter Fournelle, White Bear Lake.
T. C. Fulton, White Bear Lake.
Fred H. Clarke, Avoca.
W. A. Peterson, Yuma, Ariz.
G. D. McKisson, Fairmont.
Geo. Teigen, Lowry.
Geo. J. Kellogg, Lake Mills, Wis.
Frank Yahnke, Winona
Clarence Wedge, Albert Lea.
Halvor Halvorson, Hills.
W. H. Eddy, Howard Lake.
F. E. Cutting, Byron.
J. F. Wagner, Bennett, Ia.
J. H. Kennedy, Sheyenne, N. D.
J. S. Korista, Silver Lake.
Robert Hannah, Fergus Falls.
A. J. Volstead, Granite Falls.
John G. Williams, Duluth.
John Uno Sebenius, Duluth.
Dr. T. S. Roberts, Minneapolis.
L. R. Moyer, Montevideo.

Death of Arthur Bryant.—Arthur Bryant, senior member of the firm of A. Bryant & Son, nurserymen, of Princeton, Ill., died suddenly in the office of the nursery at one o'clock on May 13th. Mr. Bryant had been for many years one of the leading members of the Illinois State Horticultural Society, an organization with which he had been connected for over forty years, and which had honored him with probably every position within its gift. At the time of his death he was seventy-four years of age, a well rounded out life passed almost entirely in practical horticultural pursuits. Mr. Bryant is well known to many of our members as the representative of the Illinois society at the annual meeting of our society on two separate occasions during the past ten years. He was a most genial gentleman of tried integrity business ability and noble citizenship.

Decease of Mrs. Lydia Phillips Williams.—Mrs. Williams passed away after a sickness of only one week at the residence of her son, in this city, on Saturday, May 11th. At the time of her death she was filling the office of secretary of the Minnesota Forestry Association for the second year. She was a person of apparently robust health, and every indication gave promise of many years of useful service yet in the field of practical forestry development, in which she was greatly interested and where she had shown

herself forceful and able to achieve results. Mrs. Williams was born Aug. 5th, 1846, in Vermont. She came to Minneapolis and connected herself with the Central High School here as a teacher, which position she occupied until the time of her marriage in 1881. She leaves one son, Grover Williams. A sincere woman, whose loss is deeply lamented by the many who had the opportunity of knowing her and her useful service.

Champions in the State Legislature.—The horticultural society has such a host of good friends in the present state legislature that it seems almost invidious to mention any of them, but as a number of them are members of the society and were especially helpful in the passage of the "fruit breeding farm" bill, there would seem to be sufficient excuse for doing so here. The bill was introduced in the senate by D. S. Hall, of Buffalo Lake, a life member of the society, and championed by Thos. E. Cashman, of Owatonna, another life member, and a Minneapolis member of large influence, Hon. J. T. Elwell. In the house the bill was introduced by one of the younger members, N. J. Holmberg, of Renville, a graduate of the State Agricultural School and also a member of the horticultural society. Mr. Holmberg stood by this bill through thick and thin and had the last chance at it, as it was put upon its final passage in the house, where he secured the passage of an amendment inserting again in the bill the appropriations which had been taken out by the appropriation committee of the house. These appropriations provide for an annual allowance to operate the farm to run on indefinitely, so that it will not have to be looked after at every session of the legislature. There were scores of members of the legislature who were eager to help in the passage of this measure, and not one, we believe, really opposed to it. The horticultural society is fortunate in having to present at this session a measure so readily meeting popular favor as the one referred to.

State Fair Premium List.—The 1907 premium list for the Minnesota State Fair is now out and can be had upon application to the secretary, E. W. Randall, Hamline, Minn. Our readers will be pleased to note the revised list of preminms offered on fruits and flowers, which is to be found on page 85 of the premium list. There are some changes from last year's list, the most important of which is the doing away with the sweepstakes collections. In the place of this, in the class of apples will be found a pro rata premium offer for the best twenty varieties of apples and another for the best fifteen varieties of apples. The sweepstakes premium has also been done away with in the department of plums, and in its place a pro rata premium is offered far the best ten varieties. These changes confine the exhibits of fruit strictly to such varieties as are grown by the exhibitor himself. Heretofore the sweepstakes exhibit has permitted collactions to be made from other growers, but under the new plan this can no longer be done. No new varieties have been added to the list of single plates of apples except the Superb, a seedling of the Duchess, originating in Winnebago. Four sorts, the Charlamof, Longfield, Peter and Peerless, have been transferred to the class in which seven premiums are offered. In the flower department no special changes are to be noted except the premiums offered for cut flowers open only to members of some floral society. This list was made up to meet the special needs of the Minnesota Rose Society, though it is also open to members of other floral organizations.

ONE OF THE FOUR ORCHARDS OF R. A. SCHUTZ, OF LEROY, MINN., AND ITS OWNER.

THE MINNESOTA HORTICULTURIST.

VOL. 35. JULY, 1907. No. 7.

THE APPLE ORCHARD IN JULY AND AUGUST.

R. A. SCHUTZ, LEROY.

There is no time during the life of an apple tree that its strength and vitality is taxed so much as in July and August, and if the apple tree is not properly cared for up to this time these two months will prey upon its strength and weaken it to such an extent that it will become subject to blight, sunscald or other fungous diseases so prevalent at that season of the year; and then if the tree fails to live through the winter it is said that it was winter-killed, which is often a mistaken idea. We often have a continued drouth during these months, and if the apple trees have not been properly cultivated or mulched the trees will become so exhausted that they will fall an easy prey to a severe winter, and then the obituary will read, "winter-killed"—a mistaken idea!

Now there is no known cure for winter-killing or blight—but a preventive is better than a cure, and the best known preventive is to place the tree in the best physical condition possible. How can this be done? In the first place, if the trees be young they should be thoroughly cultivated, as we cultivate a good crop of corn, and bring to the surface a dust blanket to assist the capillary action of the soil and bring the moisture to the surface, and thus water and feed the roots, and promote the health and growth of the trees. But should the orchard be in bearing, which taxes the trees to their utmost, then the trees should be properly mulched, not only around the trunk of the trees, but from one tree to another, thus enriching the soil and feeding the tree through all of its roots.

I will now give you my experience on mulching and trimming apple trees, even from early spring, to assist them during the crisis of July and August. A number of years ago, before I had learned to grow my own trees, I bought 350 apple trees, two-year-old trees. The nurseryman of whom I bought the trees instructed me to plant the trees twelve feet apart, in rows running north and south, and the rows twenty feet apart. I should trim them very little but let them grow as nature had designed. Thus the trees would shade

and protect one another and themselves, and this would prevent blight and sunscald during the hot sunshine of July and August. I carefully followed his directions. But the following spring I visited an orchard that was planted and cared for in this wise and had been growing six or eight years without trimming. Well, it simply had the appearance of a man whose finger and toe nails had never been trimmed, and his hair and beard had never been shorn.

I immediately transplanted every other tree in my orchard, leaving the trees now 20x24 feet apart, and I now wish they were even farther apart, so as to let in all the sunshine that even July and August will furnish. I also pruned the trees severely and cut out all the brush wood. When I first planted those trees I mulched the trees very liberally with rich barnyard manure after I had lightly covered the roots with ground, and then I again covered the mulching with ground. When I transplanted them, every other tree, I found that where the mulching had been applied the most liberally the trees had grown a good, strong root system of fine fibrous roots. This goes to show that liberal mulching and good thorough cultivation, and proper pruning, will keep the apple trees in a healthy and sanitary condition, and enable them to withstand even a drouth during July and August, and live through a severe Minnesota winter. In my experience a tree thus cared for will quite successfully withstand that most destructive disease called blight.

Now let me give you the results. A year ago the past summer, blight was very prevalent all over this state, and other states. I have an orchard, located near my buildings, which is sheltered from winds by an oak and evergreen grove on all sides. It slopes very slightly to the north. I have a number of large apple trees in this orchard, and I have trimmed out all the brush wood, so I can take a pail in hand and walk up through the center of those trees, stepping from one branch to another, and pick the large red apples. Those trees thus pruned blighted but very little and others that were trimmed less, blighted more. This goes to show that we should keep our trees well trimmed and "let the blessed sunshine in."

I also have another orchard that is entirely surrounded by an oak grove. The first and second rows of trees on the south side, which are shaded by tall oak trees, were almost ruined by blight; the others blighted less. My other orchard, where I transplanted those trees which I mentioned, did not blight at all, and this orchard is sheltered from the south winds only.

Many varieties of apple trees, especially the Wealthy, are given to overbearing, and we get quantity at the expense of quality. In this case the fruit should be thinned by picking off the surplus

apples. However, few farmers will take the time to do this during July and August, but if you shake the branches, and thus shake off a portion of the apples, the result will be the same to some extent, and in so doing you will shake off many of the diseased and wormy apples, and you will have less windfalls. However, there is one objection to this shaking process—you will shake off the largest apples. But yet the small ones will then grow large, because they get more room and nourishment from the tree. Do this like the Irishman who hired out to hoe corn. His boss told him to thin out the corn to three in each hill. Pat did as he was told, but he pulled out all the big corn and left the small ones. His boss rebuked him, and asked why he did this, and Pat replied that he wanted to "give the little fellows a chance."

Residence of R. A. Schutz, lecturer on horticulture in Minnesota Farmers' Institute.

In conclusion I will not only add that in gathering the fruit the apples should be carefully picked and placed in new, clean barrels, and that they should be of a uniform grade in size and quality from top to bottom of each barrel, not as the honest farmer instructed his son to do, when he said, "Fill this barrel with apples for the preacher; put the largest and finest apples in the bottom; then fill up with small ones, those that we cannot sell; then nail in the head. When I deliver the apples to the parson on Thanksgiving, I will turn the barrel t'other side up and open the bottom."

Mr. Geo. J. Kellogg (Wis.): Did you ever spray?

Mr. Schutz: I turn in my hogs; they eat up all the wormy apples, and I never need to spray.

Mr. Henry Husser: I would like to know whether hogs do any harm to the trees by gnawing them.

Mr. Schutz: When you first turn in the hogs they do, but as soon as I put in a little salt and ashes where they can get at it they never gnaw a tree.

Mr. Husser: If a man has an orchard on a side hill and the orchard is not in a position to cultivate, but the trees are taken care of by properly hoeing around them, and the rest is in grass, would you advise keeping hogs in during the season to keep down the grass?

Mr. Schutz: I would not keep hogs in during the gathering season, because they can pick apples faster than you can, but otherwise I would advise keeping hogs in the orchard as long as it is practicable to do so.

Mr. Husser: You say you cultivate the trees and then cover the roots with earth, then you manure and then cover with earth once more.

Mr. Schutz: I had 350 trees, and I tried to get help to plant them, but I found I had to plant those trees myself. So I simply staked out the rows and plowed a furrow where I wanted the rows with a sixteen-inch plow. I set that plow as deep as I could and plowed a furrow one way, and turned right back and let the near horse go in the furrow, and in that way I plowed a deep dead furrow, and where each tree was to be planted my boy went along with a five-tined fork and make the furrow deeper. I put my tree in that dead furrow and pressed the surface soil on the roots and tramped it enough to get the tree to stand up in the hole, then I put in some manure that the boy brought from the hog yard. I found no bad results as to injuring the roots of those trees. Then I turned about and plowed in, the boy driving the horses, while I held the plow. I filled that dead furrow from both sides and cross harrowed it, and the 350 trees were all planted by my son and myself, with the manure thrown in, in eight and a half hours, and we got home in time for supper. When I transplanted those trees a little later (they had come directly from the nursery) I found they had even a better and finer root system than those little trees shown us here yesterday. It was because of the condition of the ground being very rich.

Mr. Husser: I am a beginner in planting young trees, but for old trees I would like to hear a suggestion as to how they should be fertilized so that the best results may be obtained. I had only a few trees on my place. They were almost dead from blight, and I was intending to cut them out, but my wife wanted me to trim them and take good care of them. So I made a trench like they do in the old country, about eight feet away from the trunk, until I reached the roots, and I put in a barrel of liquid manure. That revived the trees so wonderfully in two years that no one would have thought they were the same trees.

Mr. Schutz: When you enrich the soil you feed the tree.

Mr. Husser: I believe that feeding the tree is the best preventative for blight.

Mr. Brackett: Is your soil a sandy soil?

Mr. Schutz: No, it is a clay loam, a portion of it. I have three orchards, and some of the ground is sandy soil?

Mr. Brackett: If we try to raise apples without spraying they are not fit to market. If we keep our apples cultivated they will blight to the ground.

Mr. Schutz: I have a sandy soil, I could not help you out. Do you turn in the hogs to eat the wormy apples? If you will do that you will keep them clean.

Mr. Brackett: That does not prevent our apples from showing scabs.

Mr. Schutz: It does prevent it in some way; the hogs will eat the diseased apples.

Mr. R. A. Wright: I do not believe in the pruning the gentleman suggests.

Mr. Schutz: That is all right—let the sunshine in.

Mr. A. J. Philips (Wis.): I have not had much to do with hogs, and I don't want to start in now. I heard of a man who, instead of fixing up his home as he ought to have done, raised more hogs and bought more land and raised more hogs, and one day a man who had business with him came along and went up to the house to inquire for him. He saw his wife and said to her, "I don't see any of the men folks around here; have you got any?" "O, yes," she said, "I have three in the hog lot. You will find my husband and two boys out there; you can tell them because they have hats on." (Laughter.) I have a son-in-law who sprays his orchard with hogs, and he raises smoother apples than I do. The hog sprayer is always ready. He raises something like 125 hogs, and he has an orchard of four acres. As soon as the apples are large enough so the children will begin to eat them he turns those hogs in and leaves them in perhaps three hours. If he finds they leave the apples and begin to root or show signs of doing damage he takes them out. He keeps that up through the season, and after they are through picking, the hogs are turned in again, and they do the gleaning. He arranges the hogs as he wants them, and they eat up all the wormy apples, so he has no occasion to spray. (Applause.)

Mr. Elliot: How many hogs have you?

Mr. Schutz: In reply to Mr. Elliot I would say that I have about 150 hogs, and I can take my choice among those hogs as to which I want to turn in. I have a lawn and on the outside of that lawn and near the house there is a flower garden which my wife and girls take care of, and I would not be permitted to let my hogs run loose. The outside hogs are not allowed to go into the orchard, but I use judgment in that line, and I have been very successful with my orchards.

THE PLUM ORCHARD IN JULY AND AUGUST.

DEWAIN COOK, JEFFERS.

Cultivation may be continued up till, say, the fifteenth of July. July and August, I believe, is the best time to take a scythe and mow off any plum sprouts or any tall growing weeds that may have been left by the cultivator.

These two months are also as good a time as any to dig out any borers that may be burrowing in the trees. Any strong jackknife is all right for this purpose. While we are digging out the borers we usually cut away any very rough bark that may be on the trunk or large branches of the trees. We notice that the trees with very rough bark are more liable to be attacked by borers than are the smoother barked trees.

Right here would no doubt be the proper place to say something about spraying the fruit as a preventative of plum rot. I have done so little of it that I do not feel qualified to enter into details, but will say that spraying to be effective during wet seasons as a preventative of the rotting of the fruit upon the trees must be kept up until the fruit is nearly ripe.

At this season we sometimes find plum trees that have too many plums on them to produce the best of fruit. It is a tedious job to thin them sufficiently by hand, and but few of us will take that trouble. We sometimes take a short handled sharp axe and with it trim the trees until we think there is about the right quantity of fruit left upon the trees. July we believe to be a better month to do this trimming than August, but considerable benefit is to be derived from trimming the fruit upon overloaded trees even when the fruit is nearly ripe. This trimming the trees to thin the fruit is also a benefit to the tree itself in that it leaves the tree trimmed for the next season's crop. Most of our plum trees have too much brush upon them any way.

I have said nothing about fighting or destroying the plum curculio, as the months of May and June are the best months to do that work. But we can jar the trees so that the worst stung plums will drop to the ground, from where they should be gathered up and fed to the pigs or otherwise destroyed. Or it would be better still if we could turn some pigs loose in the plum orchard. They would very soon make way with any plums that are upon the ground.

In the writer's plum orchard we have had for many years more or less of rotting of the fruit all through the growing season, and we have tried to reduce the rot by knocking the rotten plums off from the trees with a long stick. But I believe that method to be

a mistake, as it seems to increase the plum rot by scattering the plum rot fungus spores. We now let the rotten plums stay upon the trees until we gather the ripe fruit.

Early plums begin to ripen here usually about August 10 to August 15. Little or nothing is done to the plum orchard after this date except to gather and market the fruit. Where only a few trees are grown it is advisable to gather the fruit by hand, picking them off from the trees, but with us we have but little time to hand-pick the fruit, so we have a tent that we spread out under the plum tree. Sometimes we use blankets, etc., instead and shake them off onto them, from which they are easily and quickly gathered and put into crates or baskets and marketed as quickly as possible.

Evergreen orchard shelter at Dewain Cook's.

The President: Mr. Cook is one of our best authorities on plums, so while we have him before us we want to make the most of our opportunity. It is a practical paper on a practical subject and ought to draw out an interesting discussion.

Mr. Henry Husser: Would you advise cutting the one-year limbs back on plum trees in summer when they get so long and heavy that they break down?

Mr. Cook: Yes. I cut them back nearly to the stock and give the limbs a chance to start out again.

Mr. Husser: What would you say about an old plum tree that bears very heavily? Would it be impracticable to cut out a lot of the old wood?

Mr. Cook: If I remember rightly it was stated in the paper that was the way I pruned out the plum trees, cut out a lot of limbs, go for them with an axe and cut them out.

Mr. Sandsten: What effect would it have to graft, for instance, the De Soto on the wild plum? Would it not grow too fast and rot?

Mr. Cook: Not at all; the De Soto is a native plum. It does not grow faster than any of our native plums. It might outgrow some of our northern class of Prunus nigra, but it will certainly not outgrow any of our native plums.

The President: It would be considered a good idea?

Mr. Cook: Yes, sir, it would.

Mr. Geo. J. Kellogg (Wis.): Have you grafted the Burbank on any of the Americana?

Mr. Cook: I have not, but I have grafted some of the Japan hybrids.

Mr. Kellogg: Did they overgrow?

Mr. Cook: Slightly.

Mr. Kellogg: Did that increase the hardiness?

Mr. Cook: I cannot tell, I have not had sufficient experience.

Mr. Kellogg: Will the Japanese hybrids if grafted on our native variety of plum bear well?

Mr. O. W. Moore: No, as far as my experience goes they do not; they simply overgrow. I have a pure Japanese now that bore plums last year that was grafted on native stock. The stock, I should judge, at this time is about two inches through. Above the union the pure Japanese is three to three and one-half inches in diameter at this time. In order to support that top I have to stake it securely; the top is staked the year round all the time. That is the result of putting a pure Jap on our native.

Mr. Nils Anderson: The Burbank overgrows the stock altogether.

Mr. C. G. Patten: Would it not be better to trim the plum, say, in March, the fore part of March, than trim it as suggested in July and August?

Mr. Cook: Perhaps it would be. If my subject had embraced the whole season I would have said early in the spring, but I was confined to July and August. I presume the plums would be too thick, and as farmers usually do not thin their plum trees much I put it in at that time. I think spring would be better, in fact I am sure it would.

Mr. G. A. Mills: There is Burbank's Circle, would that be hardy here?

Mr. Cook: I don't think those pure Japs would amount to anything here.

Mr. J. F. Benjamin: What do you do with the leaf lice on the plum trees?

Mr. Cook: I have never done anything with them, but kerosene emulsion is the remedy.

The President: You do not attempt to combat them?

Mr. Cook: No; some years they are pretty bad, and some years they disappear.

Mr. S. D. Richardson: Don't kill the lady bugs, and they will take care of the eggs.

Mr. Prosser: How are we going to graft so the scion will not overgrow the stock? If the Japanese plum is grafted on the native plum it will outgrow it.

Mr. Cook: I have never grafted any pure Japanese except this spring. I don't know what we can do to prevent them outgrowing it; I cannot give any plan.

Mr. Prosser: Well, if you put it down on the root?

Mr. Elliot: You will have the same difficulty.

Mr. Prosser: Will not your stock overbalance that difficulty?

Mr. Cook: If it was a short root graft it would be all right. They would throw roots out of the scion on short piece roots, and I believe that would work all right.

Mr. Elliot: Would the tree be hardy on those short grafts?

Mr. Cook: I think not.

Mr. Moore: I have tried grafting on our native roots, and it was a perfect failure.

Mr. Kellogg: I have a Burbank that bore heavily this year which is grafted on the De Soto. The blossoms were forty to the foot by actual count. They matured nicely with very little rot, but I expect it to be dead next spring. I want it to die a happy death. I saved scions, and I want to do it again. The Burbank is not hardy on its own roots, and I do not think we can save it top-grafted.

Mr. W. J. Moyle (Wis.): This question of pruning is one of great importance. Mr. Cook suggests we go through our plum trees with an axe and prune out the trees; that is better than thinning out the fruit. I would like to ask whether he has observed any damage resulting from going in with an axe and cutting out branches?

Mr. Cook: I consider it a damage to the tree to have it grow so high that when the plums fall on the ground they will crack. I cut those long branches, sometimes they are eight to ten feet long, I cut them off within a foot of the tree, and usually they throw out new shoots, sometimes they grow five or six feet in a single season, and you practically have a new tree. You keep that up for three or four years, and at the end of that time you have a new tree. It may do harm to some extent, but I think it does more good than harm.

Mr. Moyle: Will it be all right to cut them off any time during the summer?

Mr. Cook: I think so; it is hardy enough so it will stand it at any time in the summer. If a farmer has, maybe, a hundred bushels to market he has no time to gather his fruit, and if he cut off these limbs the size of the rest of the fruit will increase. You are pruning your trees and thinning the fruit—killing two birds with one stone.

Mr. Moyle: In regard to grafting the Jap on native roots, some twelve or fifteen years ago Prof. Goff grafted on a whole-root graft, and when our trees got to bearing size they broke off.

Mr. Elliot: Don't you think it would be better to begin thinning earlier in the season than July or August? After the fruit has fairly set, I do not know whether it would not be injurious, and I think it would be more beneficial to begin it in June.

Mr. Cook: Perhaps it would. I can say this about thinning plums: I have gone through the orchard when they were just getting ripe and picked off the finest plums on the trees, and what were left grew to be larger than those I picked first. I think thinning is a good thing at any time, but the earlier the better.

THE CHERRY ORCHARD IN JULY AND AUGUST.

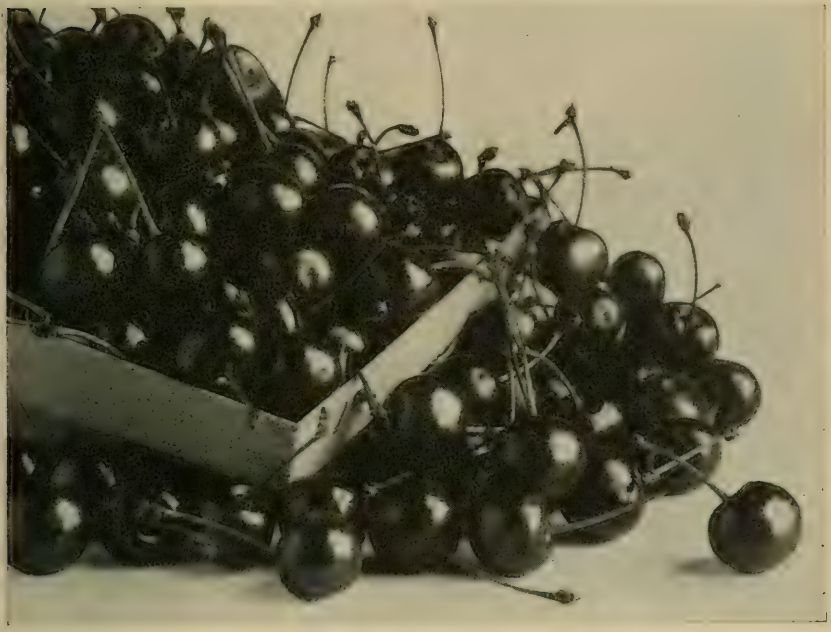
WALTER A. YAHNKE, WINONA.

The month of July, or rather the first part of it, is the busiest season in the cherry orchard. At that time the harvesting and marketing of the crop has to be done, and the crop as well as the market has to be watched carefully, for it depends as much on one as on the other to make the cherry orchard profitable. This year's cherry crop was the heaviest we had for years, and the price was good on account of the demand being far ahead of the supply. This shows that cherry growing is by no means overdone and will not be for many years to come, for the demand has been growing faster than the supply year after year. As far as Minnesota is concerned, very few cherries are grown at present. As far as I know, the most of

Gathering the cherry crop at Winona.

them are grown in Winona county. The reason why cherries are not grown more all over the state is probably due to insufficient knowledge of the requirements for successful growing. The last wet seasons have taught more to the inexperienced cherry grower about what kind of a location cherries want and under what conditions they are successful than many books could teach them. In many places where cherry orchards were planted on level and clay soils they were wiped out entirely on account of excessive moisture and fungous diseases, but, on the other hand, where the cherry orchards had a natural drainage the excessive moisture was drained off in no time from the surface and underground, and the trees

did well, providing they were judiciously sprayed with Bordeaux mixture to keep the fungous diseases in check. This year in June my cherry orchard began to look yellow. The leaves were infested with fungous diseases, and I could see from a mile away that the whole orchard had turned to a yellow color. I at once applied a good spraying of Bordeaux mixture, and in a week's time the yellow leaves had dropped off, the fungus was checked, and the trees soon became as green as they were before and matured a good crop of fruit.



The Homer cherry.

If the cherry orchards are sprayed with Bordeaux mixture before the blossom buds open and once or twice afterwards in May or the first part of June, this will generally keep the fungus in check so that spraying will not be necessary shortly before the fruit is marketed, but if this spraying has been neglected and the trees get the appearance as I described above my orchard had in June I would spray at once, even if it is a few days before picking time, even if I had to wash the fruit in order to market it. Very seldom spraying has to be done in August, as most of the seasons are very dry at that time of the year, but the cherry grower in all the manip-

ulations of the orchard has to use his judgment. The success of the cherry orchard depends to a great extent on the treatment of the fungous diseases and the right location and soil for the plantation.

The variety of cherries we grow has also a great deal to do with the success of cherry growing. We all have planted all kinds of cherries and without much success, but the success which has been achieved in Winona county with cherry growing is mostly due to the fact that they are hardy varieties on their own roots, for at present there are very few cherry trees left which are not on their

In the cherry orchard at Mr. Yahnke's.

own roots. I have tried many Russian varieties, but all proved to be a failure, some too tender in blossom buds, others too shy bearers to make them profitable. I have also tried the standard varieties planted in states south of us, and they have not proved a success, which is due probably to the fact that they are grafted on too tender stock for the cold climate in our state. The only variety which has proved a success in Winona county for over forty years is a variety which is called here the Homer. The planting of this variety is increasing from year to year.

In order to have a good crop of cherries to pick in July you must have the right location, the right variety of trees and give

them the right treatment in April, May and June. If this is observed the cherry orchard needs less work than any other tree fruit.

The picking of cherries has to be very closely attended to, and pickers ought to be taught carefully not to tear down the coming blossom buds with the stem they are picking, and also not to injure the branches of the trees when handling them. Many cherry picking devices have been invented and praised to be perfection. We have tried several of them, but none have proved satisfactory, but the time will come when somebody will invent a cherry picker which probably will fill the bill. There is probably one objection to picking devices, and that is that the stems will be short and more fruit is needed to fill the quart than if the stems are left on, but when customers know that there is more fruit and less stems in the box they will soon learn that they are worth more and will cheerfully pay the price. When the growers see the advantage of a good instrument which will do the work rapidly and satisfactorily, then all the cherries will come to the market in the same condition, and the price will regulate itself to these conditions.

Mr. C. F. Gardner (Ia.): What are the names of your varieties?

Mr. Yahnke: We have the Schlanke, Bessarabian, King and Morello. We also tried several Russian, but they did not amount to much.

Mr. Gardner: What variety does the best of all?

Mr. Yahnke: The Homer is doing the best. In Winona county there are large orchards, and they nearly all have the Homer.

Mr. Seth Kenney: Are you acquainted with an insect that looks like a snail and eats the leaves so they leave nothing but a skeleton?

Mr. Yahnke: I am not.

Mr. Merritt: That is the snail we are troubled with very much in Winona county.

Prof. Green: That is the slug.

Mr. Prosser: We had the same trouble in our section. The leaves were eaten out by some insect, and every tree that was attacked is dead.

The President: I spray with Paris green, and there is no difficulty in getting rid of it.

Mr. Elliot: White hellebore is good.

The President: I can see no reason for fooling with hellebore when we have Paris green. I use Paris green for everything.

Mr. Busse: How do you manage to keep the birds from taking your crop?

Mr. Yahnke: Plant more cherries. (Laughter.)

Mr. Geo. J. Kellogg (Wis.): Mr. Yahnke spoke of the cherry on its own roots. Have you anything but the Homer on its own roots, or do you propagate anything else?

Mr. Yahnke: Just sprouts.

Mr. Husser: Don't you think that success with cherries is as much due to location and the proper kind of soil as to anything else?

Mr. Yahnke: That has a good deal to do with it. If you plant on heavy soil they are apt to be infected with fungous diseases.

Mr. Seeley: I find my early cherry trees burst and crack. What is the cause of that?

Mr. Yahnke: We find that is true sometimes, but it is probably winter-killing. I do not know to what else to lay it.

Mr. Busse: I think it is sun-scald. Mine are the same way.

Mr. Prosser: I want to speak a word on the point of preventing the birds from getting the cherries. The best way is to plant Russian mulberries. The birds prefer the mulberries to the cherries.

Mr. S. D. Richardson: The mulberries would never save the Early Richmond cherries; they do not come early enough.

Mr. Prosser: There is a great deal of difference in the time of ripening of the Russian mulberries so far as variety is concerned. Perhaps you have a late variety.

Mr. Husser: I hear so many say they would like to prevent the birds from getting the cherries. I put cheese cloth or mosquito bar, or anything else that is open, over the tree. They cannot get through that, and you will save your cherries. If one has many trees, I believe a man would rather keep the birds fed by planting extra trees.

Mr. Merritt: Have you ever grown the Montmorency or the Wragg on their own roots?

Mr. Yahnke: We have not.

Mr. Merritt: That is very successful.

Mr. Benjamin: What time of the year does the Homer ripen?

Mr. Yahnke: About the 4th of July.

Mr. Benjamin: Do they resemble the Early Richmond?

Mr. Yahnke: They are larger and of a darker color.

The President: Earlier or later?

Mr. Yahnke: Later.

The President: Between that and the Wragg about?

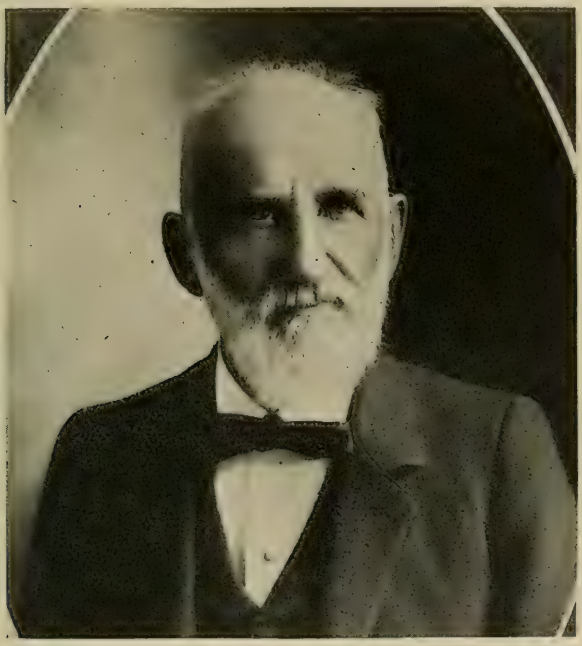
Mr. Yahnke: Yes, sir.

The President: I have noticed in my travels through the Northwest that many people have much difficulty with the Richmond, and some of them on sandy localities on timber soil have great success with the Late Richmond. The Homer is generally a success throughout the Northwest.

SMALL FRUIT GARDEN IN JULY AND AUGUST.

O. W. MOORE, SPRING VALLEY.

July and August are the harvesting months of small fruits. The first of these fruits to ripen is the strawberry. We will suppose that the strawberry bed that we are taking as an illustration was one year old the previous spring and that it has been well cared for through good cultivation and winter protection; and that the straw from the winter covering has been well placed between the rows, which will serve as dry openings for the pickers to work upon.



Mr. O. W. Moore, Spring Valley, Minn.
One of our oldest members.

and will also act as a mulch whereby moisture may be retained, and will also help to retard the growth of weeds. A large portion of the first berries have ripened, and the pickers are about to begin work.

The writer is of the opinion that there are more strawberries damaged in the picking than in the shipping. The picker should take hold of the berry at the stem and by a little twist of the wrist separate it from the parent stalk without bruising it or injuring those that remain for later ripening. The boxes should be new and

clean, and strict sanitary measures should be enforced among the pickers. Any field foreman that has the ability can, by a little friendly talk and showing, impress the importance of these matters on each and every picker with good results and be instrumental in helping to make the strawberry crop pay its owner a fair profit.

After harvesting the strawberry crop comes the preparation of the bed or field for the subsequent year. Past experience seems to have proven that to mow the old vines close to the ground is the best method. Rake off clean and burn the rakings. The plants will start new growth in a few days, when the cultivator should be started between the rows, narrowing them down to about ten inches wide. Soon new runners will begin to grow, but no matted rows should be allowed to spread wider than from sixteen to twenty inches for best results.

The ripening and gathering of currants, raspberries, blackberries, dewberries and gooseberries all come under the head of this paper of small fruits in July and August and play a very prominent part in the domestic fruit supply of the northwest. What is not put upon the general market and sold or eaten fresh from the garden is canned, jellied and jammed for winter use. The methods of gathering the strawberry applies to the raspberry as well. Touch the fruit lightly and deftly that it may not be crushed, whereby it may retain its natural shape and show well in the market place. It is supposed that these latter named fruits have had good and clean cultivation up to about the fifteenth of June, when they should have received a good, generous mulch of rotten straw or strawy manure. This mulch keeps the ground cool in the later hot months, stops weeds and succors growth largely, and prepares the ground for a subsequent crop another year as nothing else will. The foregoing is supposed to apply to an acre or more of small fruits as well as the garden.

Mr. Husser: I would like to know whether Mr. Moore would burn over his strawberry bed after the first year's picking or after the second year's picking.

Mr. Moore: I think the gentleman misunderstood the paper. I do not advocate the burning over of the strawberry bed at all, but what I said was to burn the rakings. This burning over of a strawberry bed is a very particular job. The conditions must be just exactly right in every respect. The rakings should be dry, very dry, and if the straw is burned with it everything should be absolutely dry, and the wind must be just in the right direction and be just right, so that when you set the fire the strawberry bed may be burned over quickly. Unless this is done, and what you choose to burn is wet or damp, the fire will linger and smoulder, and the plants will be more or less injured. I have never myself risked this,

and I do not advise anybody, especially an amateur, to try to take the risk.

Mr. Merritt: After the crop is gathered we mow them, mow them right down close to the ground, then rake them off and burn that stuff, and we find the young shoots come right up. You can run the cultivator through if you like. We find that a very good plan.

Mr. Prosser: In regard to that point of cutting the rows to a certain width, we cut ours down to a width of ten inches and leave everything in that space to grow. I would like to ask Mr. Moore whether that is his practice?

Mr. Moore: Yes, sir.

Mr. Husser: Is it a practical thing to burn the bed off with the straw in order to obtain bigger berries, and does it make any difference in the size of the berries whether they are thinned out with the cultivator?

Mr. Moore: I question whether there is anything in that. You may think you have inferior plants, but they will put out strong and vigorous runners and establish the row, and in another year you will see no difference.

Mr. Brackett: I would like to speak a word about my success with strawberries. I always mow off my bed after I am done picking; then I burn it off, and if by any accident I injure the plants in burning them off, I plow up the bed and plant them anew. Take the Iowa growers of strawberries; they use their beds only one year and then plow them under. In burning them off it destroys all insects, and in nine cases out of ten the plants will remain unharmed. When I plow them, I leave a strip about six inches in width. If they are too thick I go it with a hoe and thin them out and get them about as I want them.

Mr. J. B. Sherlock (Ia.): Many people now save plants to form the mother plants. How many plants are advisable to form the mother plants?

Mr. Moore: O, that is a pretty hard question to answer. I would not advise leaving more than two plants to the runner, and I should think about four runners would be sufficient.

The President: I was going to say about ten in all.

Mr. Sherlock: In northern Iowa they have the idea that the fewer the plants the better they develop, the better the crop and the healthier the plants. I have found that to be true in many things, although there are exceptions in some cases. In northern Iowa there are two or three, not exceeding three classes. In the matter of plants in sandy regions they allow more, and sometimes they cut off the entire first growth and allow no plants to grow whatever in the month of June until after the fruit is developed, because they advocate that by allowing fruit and plants to form at the same time they get inferior plants. They allow the fruit to develop without making extra plants, and then allow the plants to grow, which they think forms stronger plants.

Mr. H. J. Baldwin: It depends entirely upon the kind of soil. I have often seen where we got too large a stand in a wet season. Some kinds, like the Dunlap, will make four or five times as many plants as they ought. Every person has got to use his best judgment in the matter.

Mr. Busse: In raising plants for next year's crop, I find that the early plant produces the biggest berries. It gets a larger crown and is strong, as a plant ought to be.

Mr. Moore: I just wish to say a word before this discussion closes. I am a pretty well preserved man for my age, but unfortunately, as you have learned, my hearing is becoming defective. It is somewhat embarrassing to attend a meeting of this kind under this condition. I am a horticulturist, and I intend to remain such, and as long as I am of any use I intend to serve you. (Applause.)

THE VINEYARD IN JULY AND AUGUST.

E. G. E. REEL, EXCELSIOR.

Owing to the variation of season these past few years, it is somewhat difficult to know when July or August is likely to begin, so I may be excused if I encroach on other months to some extent. Right here I want to say that if in this paper you find a too frequent use of the big "I," it is not in a spirit of egotism on my part, but rather what I have found to be the best and most practical method of management after twenty-one years of experience in commercial vineyarding in Minnesota.

Cultivation up to July should have consisted of one light plowing as soon as the vines were unearthed and tied to the trellis, and hoeing and forking the earth away from the base of the vine; whatever other cultivation is done should be with a toothed cultivator. The Planet Jr. strawberry cultivator seems the most efficient tool I have tried. Tying is about done by July first. I use the tendrils of the vine almost exclusively. These may be manipulated so as to take the place of string, grass or cloth and will be found to hold even in a strong wind. After a few hours they harden and hold much more firmly than any of the usual ties. The secret of tying with them is to hold the shoot against the wire and pass the tendril around both shoot and wire in as large a loop as possible and draw as closely as the tendril seems able to stand. A half hour of practice is time well spent, for it will save many hours in preparing other ties. It is also the most rapidly done.

Although spraying is the keynote of success, I would not be willing to say how often it should be done, for the weather conditions vary so greatly that while in some years the sprayer, like the

poor, we must have with us always, in others one or two sprayings will be all that is needed.

The past season I used the dust stray for the first time. I believe that will prove to be the best, as the vineyard is more quickly covered with the dry spray, and the dust clings all the better in a wet, murky time, when the wet sprayer is entirely out of commission. The only question in my mind is the efficacy of the prepared dust, as we have to go by faith concerning the ingredients and the relative proportion of fungicide and medium. I had the best success working while the dew was on and in the too many foggy days. If the firms making the dry Bordeaux remain dependable, I consider it ahead of the wet spray. But there's that "if."

Summer pruning is the bugbear of most growers but is a very simple matter. Just go through the rows and, like the Irishman in the fight, when you see a head, hit it! Snap off the light green shoots at the joint, reaching well into the mature foliage. Do not wait until a corn knife or scythe is necessary. When allowed to grow until they top half way across the row it seems to do more harm than good. I always find it a hard matter to spend enough time on this work, for it is most imperative just when berries are ripe. I must confess that my Concords look pretty badly some seasons when I get into them, but then that good old Concord will stand for more abuse than any other variety—and generally gets it too. I have found it a very good plan on Moore's Early, Concord, Worden and some other of the rank growers, to go through when the cluster buds have developed—in fact any time till they blossom—and pinch off the extreme tip of the shoot. That seems to check the push of wood at a time when the blossom needs it. I consider this of great importance. However, it adds to the number of laterals that must be looked to later.

Of insect enemies, all I can say is that for the last few years they have resigned in favor of the mildew and rot. The blue beetle was never much of a nuisance with me, and I made no pretense of combating it. I wish I could say the same of the leaf-hopper. In some seasons they have literally ruined the Delawares. I never could find any more efficient way to rid the vines of them than to stand at south end of the top row and "cuss" them good and plenty. I designed a trap that caught millions of them, but *multi*-millions came to the funeral! I also used large frames smeared with the active principle of sticky fly paper. It caught a few millions of them, but there were others! I believe that about three pounds sulphur added to forty pounds of dry Bordeaux dust, sprayed or blown well into the vines, would prevent them to some extent. I sincerely

hope none of us will be obliged to try it. I have been quite free from birds the past few years. My good neighbor, H. L. Crane, "shoos" them over to Mr. Gust. Johnson. I am unable to state just how Mr. Johnson gets them back to Mr. Crane. Perhaps birds of a feather flock towards each other—at any rate, they pass me by.

It is an unusual thing for grapes to ripen sufficiently to market in August, but I will give my methods as it may be of some interest. First, however, I want to say that the extremely shortsighted policy of some growers in rushing their grapes to market only partly ripe has done more to spoil the demand for home grown grapes than any other one thing. It is a pernicious practice and should be discouraged from every side. I have carriers made to hold a California peach crate, and the pickers cut into the crates and carry to a given point, from which they are hauled to the barn, where they are stacked in racks to stand for at least twenty-four hours before packing in baskets. Standing a day or two causes the stems to become less stiff and brittle, so they handle better, not allowing them to sink and give the baskets a slack-filled appearance. They work faster and easier, and one can get more grapes in a basket that way. I use the smallest basket I can get and fill it just as full as I can possibly get it. When they have stood twenty-four to thirty-six hours, even the thinnest-skinned sorts may be packed one-half to three-fourths inch above the rim and forced down with the cover without breaking the grapes. They will, when opened, present a very fine appearance, as they will be quite even on top but still showing the clusters. Each cover is stamped with vineyard, name, address and variety. I always take special pains to have them go to market as neat and attractive as possible.

Mr. Henry Husser: I always have trouble with the Concord because they grow such immense laterals. Is it not injurious to prune out the laterals in July and August?

Mr. Reel: The lateral will exhaust the vine probably, but it is a detriment to the grape more than to the vine. It takes the sustenance away from the fruit and prevents the fruit from developing. The idea of summer pruning is to turn everything possible into the fruit.

Mr. Husser: Sometimes it happens that some varieties drop their berries, what do you think is the cause of that?

Mr. Reel: There are several reasons for that. Sometimes there is a little worm that gets in. Order varieties drop them some time before they ripen. The grapes of some varieties fall much easier than others.

Mr. Husser: I have some Clinton; they do not fall off.

Mr. Reel: You couldn't knock the Clinton off with a club. (Laughter.)

Mr. M. R. Cashman: What is the most profitable variety for the farmer in your experience?

Mr. Reel: The Concord, of all varieties.

The President: Have you tried the Beta?

Mr. Reel: I have not, but I have seen the fruit. I do not think it has the quality of the Concord. The Concord is perfectly hardy with us.

Mr. Brackett: Have you not made more profit out of the Delaware than out of the Concord in years gone by?

Mr. Reel: Yes, but the gentleman asked the best variety for the farmer to raise, and I said the Concord. The Delaware is the most profitable—or the least unprofitable—variety that we raise. (Laughter.)

Mr. Husser: What is the most desirable red variety?

Mr. Reel: The Delaware.

Mr. Geo. E. Kellogg (Wis.): Have you ever practiced girdling to hasten ripening?

Mr. Reel: During the first years of my experience, when I was young and enthusiastic, I girdled some, but the game is not worth the candle. I girdle a few, but it does not amount to much. The work is so great for what we get out of it that it is not worth bothering with.

Mr. W. J. Moyle (Wis.): What is your experience with the Moore's Early?

Mr. Reel: The Moore's Early is the best black grape we have in this country, but it is not productive enough; it is not prolific. It is a little tender and in bad years root-kills.

Mr. Moyle: How do you like the Agawam?

Mr. Reel: That is a fine grape, and it is a good quality of grape right up to Christmas, and the only reason we cannot keep them is that we eat them up. (Laughter.)

Mr. F. J. Cowles: How about the Worden?

Mr. Reel: It is a little bit earlier than the Concord, but it appears to me to be subject to more evils than the Concord; it gets wormy and falls off, and the berries rot very badly. So I dug up my Worden all but a few samples.

Mr. Husser: What kind of soil have you?

Mr. Reel: It is a clay loam.

Mr. Husser: I have noticed where the Concord does well the Worden does well and vice versa.

Mr. Reel: I have only had experience right in that one vineyard, and mine are on heavy clay soil.

Mr. Husser: I would like to hear from Mr. Reel upon one point. I saw at the state fair ripe Concords from Minnetonka, while in southern Minnesota we had no ripe grapes whatever.

Mr. Reel: I don't know why it should be so, but we had ripe Concords during the time of the state fair.

The President: I have noticed that myself, that when Minnetonka grapes were ripe those further south were not.

Mr. Husser: I would like to know the reason for that.

Mr. C. S. Harrison (Neb.): You ought to move up into a warm climate. (Laughter.)

Mr. Reel: Not having had any experience except in the Minnetonka region I cannot say.

Mr. Brackett: Most of the grapes were girdled.

Mr. Reel: I had ripe Concords at the time of the state fair, but they were from some buds that were not covered last winter. I had to be very rapid with my work, and a lot of my varieties were left uncovered. They started up quickly, and the grapes on those shoots matured sooner than those that were covered. I have noticed that frequently.

Mr. Kellogg: What is your aspect?

Mr. Reel: Southeast.

Mr. Kellogg: How early do you begin to tie up?

Mr. Reel: As close to the first of May as I can.

Mr. Kellogg: What is the condition of the vines when you begin to tie up—are the buds swollen?

Mr. Reel: The buds are usually swollen, but they ought not to be; they ought to be gotten up before they begin to push out.

Mr. Prosser: How does the Janesville compare with the Concord in hardiness and productiveness?

Mr. Reel: I have not the Janesville on my place, but I think in quality if the Janesville is allowed to get thoroughly ripe it is nearly as good as the Concord. It is hardy and productive, but not more so than the Concord.

Mr. Kellogg: I want to say just a word about the Janesville, and that is that it is good for anything except to eat.

Mr. C. S. Harrison: One of the most impressive things I ever saw was the old Concord grape, the original vine that was grown by its originator, Stephen Bull. I imagined it was alive, and I said, "You grand old mother, you do not know what you have done! Train loads and train loads of luscious fruit has gone from you, and train loads and train loads have gone from the vineyards of your children. You are the mother of ten thousand children and the grandmother of hundreds of thousands to come!" (Applause.)

Plant an acre of Snyder blackberries next spring. Let the plants stand eight by eight feet. This will take 680 plants, worth about $5. Give shallow cultivation, and sow grass seed over the whole surface in September. Any time after the leaves fall in October, cut off one half the season's growth. This annual pruning is all the care required for perhaps 10 or 15 years. The grass will grow up and ripen and fall down, and the blackberry roots will grow as they ought to, and will never be broken with cultivator or or plow. This is not the best way to raise blackberries, but probably the most profitable way. M. CRAWFORD.

THE FLOWER GARDEN IN JULY AND AUGUST.

MRS. S. R. SPATES, MARKVILLE.

The dahlia seems to be growing more popular each year. You can have a flower garden with the dahlia alone from July 1st, and not only through August but till frost cuts them down, even into October. They range in all the colors and are both double and single. The catcus dahlia is very choice, and the bulbs are more expensive. The cultivation of the dahlia is easy, and the reward is great. I plant my bulbs the first week in May generally, but first cover the ground with well rotted manure and plow or spade under. Then rake smooth. Plant the bulbs in hills three feet apart, so the top of the bulb is about two inches under ground.

Home of Mrs. S. R. Spates, at Markville, Lake Minnetonka.

They will come up in a week or ten days, depending some on the weather. Hoe them once a week, and when they get to be eighteen inches high drive a stake by each one and tie to it, as they are easily broken off by the wind. It is best to use quite a long stake to begin with, as the plant needs more tying higher up. Most of our dahlias were far above my head and were loaded with the graceful flowers reaching out in all directions.

In order to raise good dahlias, like anything else, they must have rich soil and good sunshine to grow in. I have given bulbs to friends who admired my flowers and directed them how to plant

and care for them. They got them under the ground by digging out as little sod as possible, and the soil was never disturbed after they got the bulb out of sight. The next spring they informed me their dahlias did not do well.

After the frost has killed the tops, cut them off and dig up the bulbs, shaking out the dirt as much as will come out without breaking the bulbs apart. Let them dry off half a day out-of-doors. Then I put them into gunnysacks with a label on each sack stating variety and color. Then put them in the cellar but do not lay them on the damp ground, or they will rot if your cellar has a ground floor. I lay the sacks up on top of potato bins or pile them up where they will keep dry. They must not chill, for if they do it is the end of them.

I do not separate the bunches till planting time in the spring, as they keep better and are not so apt to dry and wither up. In separating be sure there is an eye on each bulb, or it cannot grow. They are the same as a potato, if you plant a piece of potato without an eye it cannot grow. I cut them up with two or three bulbs on each piece of old stalk, and that is sufficient for a nice big hill. If more is planted in the hill, there is too much foliage, and you will not get as many flowers. I have learned this from experience by planting bulbs too liberally, to use them up when I had more than enough on hand.

Some varieties multiply more than others, but from a single bulb of most any of the varieties if it does well there will be enough to divide into from half a dozen to a dozen when dug in the fall.

For the black lice that trouble the plants after they begin to bloom, spray them with sulpho-tobacco soap. It can be got at the drug store for twenty-five cents a cake. A cake makes four gallons. Use a sprayer to put it on with. Directions come with the soap. This soap is also good to spray roses or any other plant that is troubled with lice.

THE VEGETABLE GARDEN IN JULY AND AUGUST.

H. J. BALDWIN, NORTHFIELD.

Inasmuch as there is no other paper on the vegetable products to be given, a few words may be said about the best selection of seeds. This I believe to be true: that no single firm has the best seeds of all varieties. Some make a specialty of a few things and get the very best, while others have another line of seeds that are best. Always beware of the firm who boast of the "best in the world."

One ought to be acquainted with the longevity of seeds and buy freely, using the two-year-old seed a part of which you have tested the first year, thereby insuring against a failure on account of poor strains of seeds. I might have saved at least $25.00 worth of celery if I had done this this year, for while I bought what I supposed to be the same seed as I had before and from the same firm it proved to be an inferior strain. Radish seed often fail us and grow soft, spongy things, when if tried the first year and proven good it could be relied on for the next year.

Special kinds and strains of seeds, even of the same family, need different care, time of planting and room in the rows. Every gardener has his special varieties that he likes best. I would not advise one to avoid all novelties but to depend more on standard varieties. I will give later in the paper my own idea of special varieties to use.

The asparagus bed you have done cutting, but don't neglect the bed, as your next crop depends on the healthy growth you succeed in getting during these months. Asparagus rust is our great enemy, and I am convinced that we do well to cut the bed clean until at least the middle or last of June. I had a new bed I wanted to nurse along, so cut but little, while near by I had another lot that was cut hard and late. The former was nearly killed by rust, while the latter was green at frost time. So this year I cut the new bed close and late, and it came out all right.

Plant a new lot of wax beans for fall use. A few pole wax beans are best for summer use. Try the Kentucky Wonder pole wax beans. These should be planted in the spring and will bear all summer. Nothing better than the old Bush Cranberry beans for succotash and dry winter use.

Beets for winter use sowed late, about the last of June, should be well thinned out, with rows not over sixteen inches apart to keep from growing too large.

The Silver beets, or Swiss chard, should be in fine shape for greens all summer. When full grown mow off to within three

inches of the ground, and they will come on again and make fine fall greens till it freezes up.

Celery should be in fine shape during both these months, using the white varieties and boarding up during hot weather. Late fall and winter celery can be planted where the early potatoes have been dug, using the green varieties, which have a thicker leaf and keep better. Never try to bleach them with boards. The cool fall weather will make it best to bank with dirt, and as frost and light freezing comes on the dirt will protect the plants. The leaf blight often bothers, and happy is the man who doesn't have it to fight. The Bordeaux mixture used as a preventative sometimes helps.

Mr. H. J. Baldwin goes to market.

The cabbage is a vegetable that interests us all. While we all want to get them as soon as we can, yet we all want a good supply on hand for fall and winter. We are at times disgusted with the Holland, as it is so bad to stump rot. The round or flat cabbage are easier to handle on account of the worms, and none other are so good for early use as a variety called Discovery, as hard as Holland, sure header and early enough. I notice, too, that it will grow planted for late use by sowing seed as late as June 1st. A test for late cabbage of Holland and Illinois Winter, all in the same patch, showed the Holland a miserable failure, and hardly a head missing

among the Illinois Winter. Sureheads and Early Flat Dutch were good too.

We are all interested in how to fight the worms on cabbage and cauliflower. I think Prof. Washburn good authority on that subject, and he says use Paris green in soap suds, this to be sprayed on with a knapsack sprayer. The Paris green does not need to be more than one-half the strength as for potatoes. The object of the soap is to make the solution stick on the leaves. I have gone over my young plants with this and could not see a bit of green when dry, but it did the work perfectly. Never put it on cauliflower after the heads are formed. This treatment is perfectly safe if used sensibly, and always give the benefit of a doubt to the safe side. Some poison the butterflies in a little mud hole when they come to drink, but this seems rather risky, as you will kill both friend and foe.

One of the most valuable of our vegetables is the tomato, for it is both fruit and vegetable for us. We can have it constantly on hand from about the Fourth of July to the first of November. Hotbed plants are necessary for early and ought to be transplanted three times. If on sandy ground and well mulched with strawy manure the early tomatoes will come in at least by the middle of July for us all. Earliana is good but has poor foliage and is soon gone. Burpee's Pink would be fine if so many of them did not come rough. Chalk's Early Jewel is a standby. Ponderosas are good but ought to be grown on trellis or stakes. Stone is standard. Try a few of Henderson's Tenderloin for good quality, yield and no cracks.

Potatoes are almost a field crop, but they interest us all. This is harvesting time for the early crop. A very good way is to plant a few rows of squash through the field, having left the rows in planting time for this purpose, and when digging dig the rows first next the squash rows. Nearly two full crops can thus be secured, and it is a fine way to keep down late weeds. In some parts of the northern part of the state the potato growers use the Paris green, lime and blue vitriol, all in one preparation, and sift it on dry, early in the morning while the dew is on. Will some one tell us of this process and how applied?

Everybody knows how to raise sweet corn, but we don't many of us have it as long as we might. I raise all the late corn as second crop, and by far the best corn for this use is the Country Gentleman, as it comes at the time when worms are the worst, and as there are no rows and a long silk, the worms do but little damage—and then the corn stays green longer than other kinds. Keep a crop growing on the ground until frost if you can.

Melons need careful cultivating, and a choice of kinds here is important. The Gem and Osage are desirable because of a smooth skin that does not catch disease spores as readily as others that are rough. The Osage ought to be raised in hotbeds and transplanted. An easy way is to use the oblong quart berry box, set close together in the bed, and four or five seed planted in each. Break to pieces as you plant out. They ought to be three weeks earlier handled in this way.

An easy way to handle the striped and big black squash bug when they are bad is to have a gasoline blow torch, such as electricians use. Use a small pan to drop over the hill when the swarm is on, and you get them all as they come out and very quickly too.

Don't forget to put in plenty of radish, lettuce, spinach and onion sets in August for late fall use, and a few sash of lettuce put in the hotbeds goes nice along Thanksgiving time.

If one raises this truck for sale, the greatest problem on his hands is to how best to dispose of it. The new laws allowing people to sell their own truck in the cities to private customers helps out the truck man immensely. The people want it fresh from us and have no special love for the middleman, and every hour's delay makes that much poorer truck. But this is too big a subject to speak on in the time allotted.

Mr. Brackett: The gentleman spoke of saving seed, saying that two-year-old seed is the best. Is there not an exception. How is it about celery and onion seed?

Mr. Baldwin: Celery seed ought to be good for three years. Any one growing vegetables ought to be familiar with the longevity of seeds. We know that cucumber, squash and melon seeds are better when two years old. I have used tomato seed two years old that was much safer. Radish are good for two years, and peas are good for two years, and there are only a few varieties of seed that you cannot depend upon. You cannot depend upon onions and parsnips. If you are familiar with seedsmen, if you have some friend among them to tell you just how old the seed is when you buy it it will be of great advantage to you.

Mr. Husser: We had a little experience, and I want to say a few words about the seed business. They send out some good seed, but they do not try it sufficiently to know what it is. Now in the case of onions, a person becomes awfully disappointed to get some seed and sow a lot and then have it fail, because it is too late to replant it. The best way to do is to take a hundred seeds and plant them in a box in February, and when they come up you can tell about what percentage will sprout, and you can regulate your seeder accordingly. If many germinate I would sow thin, and if only a small percentage I would sow thicker. I have received onion

seed that germinated only seventeen per cent, and then again even as low as five per cent, and both seedsmen claimed to have the best seeds in the world. Another thing, I would not advise planting Flathead cabbage; we had the very poorest result. Flathead rotted badly, while the Early Winnigstadt came through all right. We have found Paris green the best remedy for cabbage worms. We take one pound of Paris green to fifteen pounds of flour, mix it up well and put it in a cheese cloth bag, and then just go along the rows and give the bag a jerk, which will sift out a little of the dust, and in that way we have had very good success. Paris green is all right, and that mixture is strong enough to kill the worms, and you need not fear anything from the poison. We feed everything that comes out of the field to the cows, and we never had any bad result.

Mr. Baldwin: A third as much is just as efficient: you hardly need any strength at all.

Mr. Husser: What do you recommend as the best celery?

Mr. Baldwin: I have raised perhaps $150 worth a year, and I have found the Snow White, which is quite similar to the White Plume—and perhaps you would not realize the difference—to be the best. It seems to be a little stronger growing and is never troubled with being spongy. I never had that variety get spongy.

Mr. B. M. Tessem: How do you get rid of the worm that attacks the radish the last few years?

Mr. Balwin: That is the radish maggot which also attacks our cauliflower, sometimes ruining the whole crop of early cauliflower. Prof. Washburn and others have made a great many experiments, and they have not turned out to be much of a success, in getting rid of them. A strong solution of something is sometimes poured about the roots of the plants, but it does not seem to be a perfect remedy. In the old country, where they have had to deal with them for a long time and where they are bothered a great deal with them, they make a practice of putting wood ashes in the drill with the seed. Another thing, it seems to be quite beneficial to put them in heavy soil. On my sandy soil, which is the natural soil for the radish, they do very well, but the maggots will also flourish better than in heavy soil, and we have to use ashes in the row. I can grow them quickly in the cold frame where they cannot be grown in the open field. I raise them much nicer that way than I can in the field in the early spring.

Mr. Merritt: How do you treat the tomato vines for blight?

Mr. Baldwin: I have tried putting on Bordeaux, but I believe a good way is to give them a thorough mulch of strawy manure or coarse straw after they have been cultivated once or twice. I have seen rows of the same variety side by side. Those that were mulched did not blight, but those that were not mulched blighted very badly.

Trial Stations

MIDSUMMER REPORTS, 1907.

CENTRAL TRIAL STATION.

PROF. SAML. B. GREEN, SUPT., ST. ANTHONY PARK.

The very backward and in some other ways unfavorable spring has apparently not interfered with the outlook for a good crop of fruit. At this station the season is fully three weeks behind the ordinary, but since the plants have come into flower the conditions have been quite favorable for securing good pollination. Apples, plums, strawberries and raspberries have flowered profusely. It is too early yet to determine how much of the crop will set.

The trees, shrubs and other herbaceous plants on the campus also came through the winter in much better condition than a year ago and with very little loss of even the more tender kinds. For some reason or other our blackberries, although covered with earth, were severely injured, so much so that I thought it best to cut them off at the surface of the ground. They have sprouted well and are now making a very rapid growth. Japan plums, I learn, are badly injured throughout the northern states.

The work with seedling fruits which was somewhat enlarged a year ago is continuing along in a satisfactory way, and we shall need the new fruit farm to take care of our seedlings this autumn. There is no doubt but what the University Regents will have purchased it by that time. It is the opinion of the executive committee of the Horticultural Society that this farm should be located in some good fruit section where we can grow the best varieties in order that we may have them near by to cross with the inferior but hardier kinds. It is especially desirable that we try to secure crosses between the Japanese plums and other improved species with our hardier but not so much improved native sorts. This would seem to be a specially promising field of labor.

Work with apples and other fruits should also receive special attention in order that we may get varieties that are hardier than any we now possess. Seedling work in this line which was undertaken last year now covers several acres of land, and yet much of the stock is in close rows where the final trial cannot be made. The 5,000 seedling Malinda apples, which are probably a cross between that variety and the Duchess, have been planted out and are doing

well. About 6,000 plums of selected varieties are also being held over for planting out at the new plant-breeding farm. Besides these seedlings we have a large number of very promising apple and plum seedlings which will need more room next year.

Last year's work with strawberries consisted largely of making crosses between the hardier wild types from this vicinity and from Alaska with the better cultivated kinds. These have been planted out three by four feet apart for trial. We are doing further similar crossing work at this writing. The raspberry and blackberry seedlings which were largely raised from crosses of various kinds have done well, and we have several thousand plants that will be ready to set in the open field in the course of a couple of weeks. They are now growing in boxes, as we find that the safest way of handling these seedlings that have cost so much labor.

In the way of ornamental plants for distribution we have secured a stock of seedlings of Alpine currant this year for the first time. Although we have grown this very desirable shrub for twenty years at University Farm, yet they never fruited until last season. It is quite evident now that under right conditions it will produce seed in abundance. We have now perhaps 6,000 seedlings of this which can be distributed the coming year.

Cotoneaster acutifolia is a valuable ornamental shrub, as the foliage is brilliant and the plant is desirable for hedges and for massing. We have secured quite a good stock of this plant and shall probably be able to distribute 5,000 seedlings.

The work in testing potatoes to determine those varieties that are most immune to disease will be continued this year as well as the experiments in spraying to determine its value. We have also several kinds of seedling potatoes and imported "alcohol" potatoes, which are of much interest in an experimental way.

We have a good number of seedlings of apples, crabs, plums and shrubs of various kinds growing in our seed bed which it is hardly worth while to notice at this time, as it is too early to draw definite conclusions as to what the outcome will be. Take it all together, although the season has been backward, yet the conditions at this writing are rather promising and should they continue favorable, we will probably have nothing to complain of in the way of horticultural crops.

GLENCOE TRIAL STATION.

A. H. REED, SUPT.

In this, my midsummer report of 1907, I have to report a splendid outlook for fruit of nearly every variety.

A remarkably late spring retarded the blossoming of fruit trees three weeks, especially apple trees, which were in blossom May 14th, in 1906, were not in bloom until June 4th, this year. Sunday, June 8th, passed as "white Sunday" and a very lucky thing, for a heavy frost occurred May 27th, but fortunately there appears to be no damage to fruit blossoms. Apple trees in this vicinity were "trees of beauty" while in bloom, on many of them not a leaf could be seen for blossoms, and the fruit seems to be setting well, and the prospect for an abundant apple crop bids fair to equal the crop of 1905.

My record reads, "May 30th, only strawberries in part blossom." At this writing, June 18th, an abundant crop is in prospect as well as of currants and gooseberries.

The "Compass Cherry" plum is as usual loaded with fruit.

A good crop of native plums is promised, but those bearing fancy names are shy of fruit prospect.

My Bartlett and Seckel pear trees, that gave such promise of hardiness by passing through the winter of 1905-6, without a branch killing back, succumbed to the thirty-six below zero of last winter and killed back to within six inches of the ground, but are sprouting up and growing vigorously.

My Early Richmond an English Morello cherry trees have lived through two winters and are vigorous growers, some of them fruiting the second season. They were set at three years of age.

For a shade or a timber tree I have become in love with the catalpa. Three years ago I purchased and set out a hundred one-year-olds. The first winter they killed back part way, but the season following their growth more than made up. The second winter some of them killed back a part of the last season's growth, but the past winter, the coldest of the last three, not one showed signs of killing back and now some of them are twelve inches in circumference and ten feet high. It is claimed that catalpa timber makes excellent railroad ties and at nine years of age can be used for that purpose.

JEFFERS TRIAL STATION.

DEWAIN COOK, SUPT.

Fruit trees of all kinds grown here came through the past winter in as good condition as usual; there was no winter killing.

Strawberries where the plants had been covered up came through the winter in good condition and now promise a fine crop of fruit.

Red raspberries, except where they were grown in an extra protected place, were badly injured by the winter, and we expect only a light crop of this fruit.

The plum crop will be practically nothing; we may get a few to exhibit at our fair, but that will be all. While all varieties blossomed as fully as usual, we are satisfied, after a careful examination of a great many blossoms when they first opened, that a large portion of the fruit buds of most of our American varieties had been injured by the winter, probably by the very cold weather of April, which followed the unusually warm weather of March. A few varieties apparently set for a good crop, but the blight or the plum rot about finished them, brought on, no doubt, by too much cold and rainy weather about the time the bloom began to drop from the trees. This cause took most of them, while the plum pockets are showing freely on trees that have a few plums left.

Of apples and crabs the prospect is good for a large crop. This includes about all the varieties that are usually productive here. We are in hopes to harvest one thousand to twelve hundred bushels of apples and crabs this season, provided the apple scab don't strike us too hard. We have not discovered any apple tree blight, but we have noticed some apple scab on the foliage of some of our apple and crab trees. The blooming season of both the apple and plum was nearly four weeks later than usual—some varieties of crabs have some bunches of bloom upon them yet, June 19th.

Plant an acre of Snyder blackberries next Spring. Let the plants stand eight by eight feet. This will take 680 plants, worth about $5. Give shallow cultivation, and sow grass seed over the whole surface in September. Any time after the leaves fall in October, cut off one-half the season's growth. This annual pruning is all the care required for perhaps 10 or 15 years. The grass will grow up and ripen and fall down, and the blackberry roots will grow as they ought to, and will never be broken with cultivator or plow. This is not the best way to raise blackberries, but probably the most profitable way. M. CRAWFORD.

MONTEVIDEO TRIAL STATION.

L. R. MOYER, SUPT.

Among the perennial flowers reported hardy in Vermont, but which failed here last winter, are Alyssum saxitale, Bellis perennis, Euphorbia corollata, Papaver nudicaule, Lupinus perennis, Saponaria ocymoides and Chrysanthemum maximum.

Hibiscus Moscheutos was much injured but is at the present writing sprouting up from the ground.

Gaillardia aristata was somewhat injured but is coming on from root sprouts.

Warm weather in March and the early part of April induced a too early uncovering of the tulip beds, so that they were much injured from the cold weather that followed.

All the varieties of German and Siberian iris are blooming finely, and the prospect is good for a fine display of pœonies.

Chrysanthemum coccineum is just coming into bloom and is a very satisfactory plant.

The different varieties of Aquilegia are giving good satisfaction. Aquilegia Siberica is an especially stately and showy flower and is apparently very hardy.

Our common biennial Campanulas raised from seed all failed, but Campanula pinnata is coming forward in good shape.

All the varieties of phlox planted last year came through in good condition.

Centaurea macrocephala seems to be in perfect condition, and Lychnis dioica rosea is now in bloom. We have had the typical Lychnis dioica at this station for many years. It takes care of itself and is inclined to be somewhat weedy. The variety rosea seems to be a much more desirable plant. Lychnis coronaria raised last year from seed came through the winter in perfect condition, but has not yet bloomed.

Garden delphiniums from seed are in good condition and will probably bloom. They appear to belong to the English section and are probably varieties of Delphinium formosum.

Phlox divaricata, brought in from the woods and set in shady places, seems to be about as desirable for an early blue flower as Mertensia pulmonarioides and to spread with equal rapidity.

Tritonias taken up last fall and treated the same as gladiolus bulbs failed to germinate this spring. Probably the bulbs ought to have been buried in sand.

In the shrub border we are especially pleased with Lonicera Ruprechtiana. The flowers are whitish and rather small, but they

appear in innumerable clusters. The curving branches form a round-headed symmetrical top, and the fruit is said to be very beautiful; but at this station the birds take it as fast as it ripens.

Philadelphus microphila since its removal to a more sunny location is doing well. It is an attractive little shrub. Philadelphus Lemoinei came through the winter in good shape and will be a fit companion for its larger and more robust relatives.

Viburnum Pekinensis is making a vigorous growth and promises to be at home here.

Dictamnus albus rubra is in a thriving condition and will bloom profusely within a few days.

Forsythia suspensa produced a few flowers this spring, and after part of last year's growth was cut back it appears to be in a promising condition.

Tamarix Amurensis killed back very badly last winter. From the shape of its leaves one might infer that this shrub is naturally a xerophite. Perhaps the last two seasons' rainfall have been too much for it.

Berberis Thunbergii forms a low spreading bush of fine appearance and is apparently hardy. It produced a few light colored flowers this spring. The fruit is said to be very showy. We look on it as a decided acquisition.

The other well known shrubs so often spoken of in the reports from this station are doing well and giving great satisfaction.

There is promise of a large crop of currants and gooseberries and a moderate crop of raspberries. Columbian left standing uncovered did not suffer so much from the winter as did the Loudon, nor as much as some of the other varieties from which the winter covering was removed too early.

There promises to be a moderate crop of apples and a light crop of plums. The trees in the experimental orchard have been sprayed three times with a Kansas City dust sprayer, using their "general formula XX", which is supposed to be Bordeaux with Paris green.

PLEASANT MOUNDS TRIAL STATION

J. S. PARKS, SUPT., AMBOY.

This station came through the past winter without the loss of a bud or limb. I never saw trees or plants in better shape for a crop of fruit, and apple trees especially are now set for the heaviest crop ever seen on our trees. There are no signs of spur blight or other trouble.

A few plum trees are a little shy—the Aitken and a few others that blossomed earliest got a little frost and will not bear a full crop.

Currants and gooseberries are late and may be a light crop.

Strawberries are late but never gave better promise of a bountiful yield—no insect enemies so far on plants.

We have just used the last of our Baldwin apples raised last season, top-worked on Virginia crab. We expect some choice fruit this season top-worked on Hibernal and Virginia crab.

We saw a new enemy among our apples this morning, June 19. Two big crow blackbirds were in a Duchess tree picking and swallowing apples as a robin would cherries. Who has seen or known of this before?

WEST CONCORD TRIAL STATION.

FRED COWLES, SUPT.

The spring of 1907 will go down in history as an unusual season. In March we had a few summer days but, fortunately, not enough to start growth. Then April and May were cold with just enough moisture to make the soil favorable for planting. The leaves did not start until the middle of May, so we were not crowded as last year. Everything wintered well. Nothing root-killed, and but few things killed back in the nursery.

As to the prospects of fruit this year I will commence with the strawberry, as that is the first fruit to ripen. The prospects now are for a good crop, altho it will be very late. I doubt if we shall pick any fruit to speak of before the Fourth of July. Where the plants were not covered well they root-killed but where covered look very well. Columbian raspberries that were not covered killed back some, but Older stood well unprotected. King stood the winter well. Gooseberries and currants are full of fruit, altho the clusters of currants are not full on account of a frost while in blossom.

The prospects for apples are very good, as most varieties are well filled with bloom. Patten's Greening is unusually full in my

orchard, as they bore no fruit last year. The Yahnke that I set two years ago do not look very promising, as they do not seem to have stood the winter very well.

Plums and Compass cherry blossomed full; Compass is set full of fruit, but plums are not as a general thing overloaded. The Surprise is not bearing very heavily this year.

Evergreens are looking fine. Arbor vitæ blighted a little but not so badly as last year. There seems to be an increase in the planting of evergreens each year. At this writing the spirae, snowball, lilac and honeysuckle are in full bloom. Pœonies are budded full but not open yet.

OWATONNA TRIAL STATION.

THOS. E. CASHMAN, SUPT.

Nothing of interest has developed at the Owatonna Trial station since my last report. We are going through the regular routine of cultivating and spraying as usual. We have sprayed all the trees at the station twice this season.

It looks now as though we would have a light crop of most varieties this year. The trees blossomed quite full but on account of cold, wet weather a large portion of them did not set.

These wet seasons are demonstrating to us that we must plant our trees on high land that is well drained or carry off the water by installing a perfect system of tile drainage. Apple trees will not stand wet feet. Another very important feature in planting trees is to set them deep. The root is the foundation of the tree and yet is the most tender part of our standard, hardy kinds, and if the roots are not placed below where alternate freezing and thawing will affect them, the tree will be short lived unless well mulched each year, and a great many of our people either forget or think they have not the time to mulch.

All trees that grew the first year of the twelve budded on Pyrus baccata, are doing nicely, look vigorous and healthy and are making a good growth.

After the hotbed has served the purpose of growing plants for the garden, it may be used to grow plants of late cabbage or for the main crop of celery. One other use to which it may be put is to plant cucumber or melon seeds directly in the frames where they may be protected by the outgrow the frames before the season is over; but as the hotbeds are usually in some out-of-the-way corner, the vines will not be unsightly and the yield is usually enormous.

Secretary's Corner.

Report of Summer Meeting.—The regular summer meeting is being held so late this year that it is impossible to publish the report in the July number, so that the list of awards as well as the regular report of the meeting will not appear until the issuance of the August number. All premiums taken at the meeting, however, will be paid by check very soon after the meeting, though full information as to premiums taken will not be accessible until the August number is received.

The Fruit Exhibit at the Coming State Fair.—Are you planning to make an exhibit of such fruits as may ripen well at your place at the coming state fair? So many of the older exhibitors, who have carried the work of the horticultural department at the fair for so many years, have dropped out that it becomes necessary to seek much new material to take their places. Please look over the premium list early and see what exhibits you can probably make and plan for this weeks beforehand, not leaving it for the last few days before the fair. The secretary, who has charge of the horticultural department as usual again this year, would like to hear from all probable exhibitors and especially the newer ones, and any information desired along this line will be gladly furnished as far as possible to do so.

The Fruit Breeding Farm.—A good many offers have been received of locations thought by those making the offers suitable for the purposes for which the fruit breeding farm is designed, and quite a number have been visited by members of the board and others. Only one has so far been found which gives promise of being up to the high standard required. This farm is located at Zumbra Heights station on the Minneapolis and St. Louis road, this being the last Minnetonka Lake station on that line of railway, about a mile from the lake and five miles west of Excelsior. An option for thirty days has been taken on this land. Any other sites that seem to our members to be favorable for this purpose, we should be glad to hear of, and the secretary or any other member of the executive board of the society may be communicated with in the matter—but it should be attended to promptly.

Decker's Seedling—"Has been growing between thirty and forty years on the farm of Mr. J. S. Decker, just east of the city of Austin. This is a large apple, somewhat in shape and color between the Malinda and N. W Greening. That the tree is hardy enough to stand our climate seems almost assured. The original tree was a Duchess root graft, the Duchess growing upright as the main tree and this seedling springing up as a sprout below the graft on either side, making two low trees spreading out underneath the Duchess, one at the north and the other at the south. Being thus so overshadowed by the Duchess, it seems exceedingly strange that it should ever have held on so well and borne so much fruit. Scions cut from it look bright, clean and hard. Mr. Decker assured us that he had picked as high as a barrel apiece from those two low growing root sprouts, of which the tree consists. In quality this variety ranks very high, being given the highest score of all seedlings of its class by the committee on awards at the late meeting of the State Horticultural Society." Clarence Wedge.

Fruit Prospects in Manitoba.—Mr. A. P. Stevenson, of Nelson, Man., under date of June 17th, writes "Our fruit crop prospects are good this year. No winter-killing in the orchard. We have now in full bloom in our orchard 400 apple and crab trees, 200 plum and 40 cherries. The small fruit crop is extra promising and currants and gooseberries are setting heavily."

Ornament the Roadside.—An enthusiastic but somewhat erratic horticulturist in Cook County, Ill., is organizing a new political party, plank three of which provides "that all our roads be planted with fruit and nut bearing forest trees, shrubs and flowers." He says, "In England, France, Germany and other European countries the government orders, builds and cares for the roads, and plants fruit and nut bearing trees along each side, also shrubs and flowers. The passers-by are allowed to pick up and use all fallen fruits and nuts, but not to pick from the tree and injure them, neither the flowers or shrubbery." This part of the proposed platform proposes ideal conditions which we should all enjoy seeing developed.

The Golden Weeping Willow.—According to Geo. R. Peterson, of Collis, Minn., the Golden Weeping Willow is a variety of weeping tree very desirable to plant, as it is a fast grower and hardy. He describes it as having "a yellow bark but not as bright as the Royal Golden Willow. Neither is the leaf as broad, but it is a silvery green underneath reflecting in the sun as the wind sweeps the ground with its long, slender branches. It does not sucker but grows well in tree form, though it must be provided with a long trunk on account of the length of its pendulous branches. It grows readily from cuttings." Mr. Peterson has sent some cuttings to Prof. Green at the experiment station, and the variety will be tested there.

Summer Meeting, Minnesota Rose Society.—The regular summer gathering of the Minnesota Rose Society will be held in the Mayor's Reception Room, in the City Hall, Minneapolis, on Saturday, July 13th. A liberal premium list has been prepared, aggregating in value approximately $200, so that a fine display of roses and other flowers may be expected. Competition is open to all, though a membership fee of $1 will be required from successful contestants. The public is cordially invited to be present during the day and see the display, also to listen to the excellent practical program which has been prepared. The premium list can be secured upon application to the secretary, Mrs. F. H. Gibbs, St. Anthony Park, Minn.

Fruit Outlook for 1907.—From the rather meager reports that have come into this office from different points in the state as to the prospect of the fruit crop this year, up to this date, June 26th, it appears that there is likely to be a good crop of apples, in many localities as good as in 1905, and from very few points is there an unfavorable report as to this fruit. Plums have apparently not set well and only a light crop may be expected, with exception possibly of a few localities. Strawberries are now generally going out of blossoms and the prospect is good for a fair crop, though there has been some injury to strawberry beds. Red raspberries in many cases are in bad shape. So far I have heard of no injury to the blackcaps, which are likely to yield well. Some unfavorable reports have been received from the blackberry growers. Gooseberries are likely to bear to the limit. In the case of currants there is evidently some injury to the fruit buds, as in many cases the bunches are open and straggling.

"Horticulture in the North."—Under this title appears a seventy-two page, neatly bound paper covered book written by D W. Buchanan, of St. Charles, Man,, a guide to fruit growing in the prairie provinces of Canada. It has a good table of contents and seems to cover quite effectively the subject of fruit growing in that region. It contains also a short article on trees, shrubs and other plants adapted to that section.

Mixing Varieties in the Windbreak.—"The secret in planting trees is to mix varieties. For instance, I planted together, willow, ash, soft maple and cottonwood, the cottonwood all died years ago. They fulfilled their work in shading the ash and maple, which require protection in order to make straight and thrifty trees. All of these trees are in the swine lot, and the swine have access to them, making ideal conditions." W. T. Warren, Woodstock.

Who Has Bearing Nut Trees in Minnesota?—Inquiries often reach this office for fresh nuts from trees of butternut, hickory and walnut. Of course that means from Minnesota trees, and if any of our members have any that they can spare if they would let the secretary know he could announce it in the Secretary's Corner, and in that way they would be distributed into the hands of others who would like to test them. That is one way to widen the field of work of the horticultural society, and a good one too.

The Norway Poplar a Valuable Tree.—"My Norway poplar planted from cuttings twenty-three years ago are about sixty-five feet high and measure thirty-eight inches around, two feet from the ground. Cottonwoods alongside of them mostly died years ago, planted at the same time. The Norway poplar does quite well on high ground where the willow will not succeed well and are unsatisfactory. These trees fulfill more nearly forest conditions than any others I have." W. T. Warren, Woodstock.

The Timber Supply.—"Every person in the United States is using over six times as much wood as he would use if he were in Europe. The country as a whole consumes every year between three or four times more wood than all of the forests of the United States grow in the meantime. The average acre of forest lays up a store of only 10 cubic feet annually, whereas it ought to be laying up at least 30 cubic feet in order to furnish the products taken out of it. Since 1880 more than 760,000,000,000 feet of timber have been cut for lumber alone, including 80,000,000,000 feet of coniferous timber in excess of the total coniferous stumpage estimate of the Census in 1880." These are some of the remarkable statements made in Circular 97 of the Forest Service which deals with the timber supply of the United States and reviews the stumpage estimates made by all the important authorities.

Varieties of Trees for Street Planting.—In the city of Minneapolis there is an ordinance in existence prohibiting the planting of box elders and cottonwoods on the public streets, and it is well that the attention of the planters in that city and elsewhere in the state should be called to this fact, as these varieties of trees are not desirable for that purpose. The favorite shade tree is the white elm, and there is nothing better, especially if the trees planted have been grown from seed of some choice type of the elm or have been raised from grafts of some especially handsome type—which latter method of propagation is now being carried on by some of the more progressive nurserymen of the country. The hackberry, which is near enough like the elm to be called its first cousin, is also a desirable street tree, making an even closer shade than the elm, but cottonwood, box elder, soft maple and all other brittle-wooded trees should be discarded for this purpose.

A. M. Shaw.

Old life member lately deceased.

(See opposite page)

THE MINNESOTA
HORTICULTURIST.

VOL. 35. AUGUST, 1907. No. 8.

In Memoriam.

A. W. SIAS,

POMONA, MO.

Died December 24, 1906, aged 74 years.

In preparing this memorial of our departed brother we cannot do better than quote the exact language of another departed brother, the late John S. Harris, in a sketch prepared by him at the time of the removal of Mr. Sias from the state in 1890, and published in the report of this society for 1891. It is almost like a voice from the dead to those of the older members who were familiar with the literary work of Mr. Harris:

"Mr. Sias was born at Derby, Orleans county, Vermont, May 3, 1832. His youthful days were spent on his father's farm, the old homestead that descended from his grandfather, which was located in the midst of some of the finest views and most beautiful forest and mountain scenes in all New England; and there is no doubt but this scenery and the surroundings of his earlier years gave him that love for trees which has been a characteristic of his after life and of late years has been his ruling passion. In the spring of 1851 he accompanied his parents to western New York, where they located on a farm situated in the midst of the greatest nursery district and the then best fruit region in the United States, near the city of Rochester. For a few years he divided his time between assisting a corps of engineers in surveying railroad lines from Rochester to Niagara Falls, and later on the Toledo, Wabash and Western road; attending the Genesee Wesleyan Seminary, and as a traveling agent for the nursery firm of Nelson & Barker, near Rochester. He came to Minnesota in 1859, and for a time made his headquarters at St. Charles, in Winona county. Some time in 1863 he removed to Rochester, Olmsted county, and immediately started the College Hill Nurseries, making a specialty of apple trees and evergreens. I first made his acquaintance at the state fair held at Rochester in October, 1866, where he rendered me valuable assistance in arranging my show of fruits, flowers and vegetables so that the display should make the most favorable impression upon

the many visitors on that occasion. My first impressions of him were that he was a man possessed of sterling integrity and good ability, and from that hour we became fast friends. The objective points I found in his character were that he was too modest and unassuming where only his own interests were concerned, and that he would permit other and less worthy men to push him aside and step in ahead; and too conscientiously honest to compete with that class of unscrupulous tree venders who at that period were working the tree business for all there was in it, selling unknown auction stocks of trees at 50 cents, $1.00 and upwards each, while much of his carefully grown stock remained on his hands unsold. I am glad to know that the young man, after long association with me, has to a certain extent been able to overcome this modesty, and is now aggressive and even pugnacious in defending his rights, while his reputation for honesty remains untarnished.

"On the morning of October 4th, 1866, when the venerable D. A. Robertson broached the question of organizing a "State Fruit Growers' Association," our friend Sias was one of the first to second the proposition, and with Wm. Somerville, R. S. Cotterell, I. W. Rollins and several others, rendered valuable assistance in organizing the society which has become the State Horticultural Society of today, and ever since he has remained a steadfast friend and faithful worker in our ranks.

"My impression is that he acted as secretary of the preliminary meeting of organization. He has since served years and has always been found promptly at the post of duty. He has always been an earnest advocate of the planting of ornamental shade trees, and today the city of Rochester owes much of the beauty of its streets, lawns and homestead surroundings to the precepts and example of our worthy friend. At his home on College Hill are growing forty varieties of the pine family and almost every variety of native and foreign deciduous tree that is hardy enough to endure this climate. The grounds have been well kept and the arrangement shows skillful landscape gardening and successful tree planting. Many of the most successful orchards of southern Minnesota have been planted with trees from his nursery. As an orchardist his work has been largely experimental. His orchard contains over fifty varieties of Russian apples, a still greater number of American and their seedlings, and something like forty of the Siberians and their hybrids, besides pears, plums and cherries in numerous varieties. In 1882, 103 varieties produced fruit. What the final result of the experiments carried to completion would have been it is impossible to tell. On August 21, 1883, the great tornado that swept over Rochester and its vicinity, leaving desolation, ruin and death in its track, uprooted one-half of the trees in his promising experimental orchard and left the remainder in a sorry plight. In a moment, as it were, the treasures he had been years in collecting were almost annihilated, and the most thorough experimental work that had at that time been undertaken in the state, with all its hopes

of success, was lost or set back for many years, and the financial loss to him was one from which he has never fully recovered.

"Our society has always found him at the front whenever any aggressive work was to be done. We shall miss him in our councils, and we hope that he may be most abundantly prospered in his new home and the horticulturists of Colorado may appreciate his worth."

To this enviable record is added the following from his son, Edgar D. Sias, of Pomona, Mo.:

"In 1890 father moved to Pueblo, Colorado, and transferred there a large quantity of his fruit and ornamental trees, which were planted in Central and Fairmont parks of that city. The high altitude of Colorado proving prejudicial to my sister's health, as she had a heart affectoin, father decided to remove to Harbor View, Florida, the home of his sister, arriving there New Year's day, 1894. Wherever he went he carried the gospel of horticulture, and through his zeal as a promoter thereof the latent potentiality of 'southern hospitality' was liberated, and on 'Apple Day,' October 4, 1905, the thirty-ninth anniversay of the organization of the Minnesota State Horticultural Society, at Rochester, Minn.,—the birthplace of the writer—the Southern Florida Horticultural Society was launched upon the beautiful waters of Charlotte Harbor, at Punta Gorda. At this meeting father exhibited the Diospyrus kaki (Japanese persimmon, or apple of the gods) with which he had signal success in grafting upon the native persimmon.

"In 1903 he made a trip to the island of Cuba, and while there but a short time, at his instigation, a call for a horticultural meeting appeared in the 'Havana Post,' but owing to the funeral of one of Cuba's greatest generals I think no organization was perfected at that time.

"Our Missouri home was christened 'Memorial Park,' and here he had dedicated 'wooden monuments,' as he termed his fruit trees, to prominent horticulturists of various states. As illustrative of his abiding interest in the horticulture of the North Star State, one of the last entries in his diary, made at St. Louis en route from western New York to Missouri was, 'Took cars for Pomona, Mo., about 2:10. Last day of the four-days' session of the Minnesota State Horticultural Society.' "

As noted by Mr. Harris, Mr. Sias was one of the original members of this society, and his death leaves Mr. Wyman Elliot as the only surviving one of those who gathered at Rochester on that eventful day, with the possible exception of Mr. C. L. Smith, now of Spokane, Wash., of whose presence, however, at the meeting

there is no record. Mr. Sias in those days was a comparatively young man and apparently took little part in the meetings of the society, the records not showing his name as an active participant again until about the year 1876, from which time on until he removed from the state probably no member contributed more towards the varied services of the association. In 1876 he was elected treasurer of the society, succeeding the late Amasa Stewart. This position he held, with the exception of 1879, until the year 1881. On this year his name appears first in the list of vice-presidents, which position he held for ten years, or until the time of his removal from the state. The writer had a personal acquaintance with Mr. Sias of a very pleasant nature, and subsequent to his removal several letters annually passed between us, so that his life abroad was in a sense known here. Reference has occasionally been made to Mr. Sias in the columns of our monthly, and our readers will recall a number of original poems from his pen signed in his usual unique way, "Sam Bucus." Those who attended the banquet of four years ago will remember the box of citrus fruits from Mr. Sias distributed on that occasion.

An original thinker, profoundly interested in horticultural subjects, he has contributed much to the fund of information on subjects especially pertaining to the growth of Minnesota fruits, and we are all indebted to him for this service. The society did not forget its obligation to Mr. Sias, and at an early day, in the year 1884, he was made an honorary life member of the association. His latest purpose to lay out and maintain what he called a "Memorial Park" at his new home in Pomona, Mo., was carried out in a measure at least, as referred to by his son in a foregoing paragraph. Few pioneers in Minnesota horticulture accomplished as much and possibly none more in placing it upon a firm foundation for future safe development than our deceased friend, who for twenty-seven years with tireless effort gave his life to this service.—Sec'y.

CONSTITUTION OF THE MINNESOTA STATE HORTICULTURAL SOCIETY.

Article I.—Name.—This society shall be known as the Minnesota State Horticultural Society.

Article II.—Its object.—The object of this society shall be the advancement of the art and science of horticulture throughout the state.

Article III.—Membership.—Any person may become an annual member by paying to the secretary an annual fee of $1.00 or a life member by the payment of $10.00, provided that the life fee may be paid in two annual payments of $5.00 each. The members of any local horticultural society, the annual fee of which is not less than $1.00, may become annual members of this society, provided such local society shall send to the annual meeting of this society a duly authorized delegate and shall transmit to the secretary a properly certified list of its members, an annual report of its proceedings, together with the papers read at its meetings, and an annual fee of twenty-five cents for each member of such local society.

All memberships shall expire at the close of the first day of the next annual meeting. Honorary members for the time stated, or for life, may be elected at any annual meeting by a two-thirds vote of the members present, provided that the name proposed for this purpose shall be first referred to the executive board. Every member shall be entitled to one copy of the transactions, postpaid, as often as published.

No member shall vote on any proposed amendment to the constitution or by-laws or at any election of officers except those who have been members for not less than two consecutive years immediately preceding that in which the election is being held.

Article IV.—Officers.—Its officers shall consist of a president, one vice-president from each congressional district, a secretary, a treasurer, a librarian and an executive board of six. All officers shall be elected separately and by ballot cast personally by the membership, and shall hold office until their successors are elected and qualified, except that the vice-presidents may be elected by the secretary casting therefor the ballot of the society. The annual election of officers shall take place on the afternoon of the third day of the annual meeting. All terms of office shall begin immediately upon election, and no person shall be eligible to hold office who has not been a member of the society for the three years immediately preceding. The president, vice-presidents and the treasurer shall hold their offices for one year. An executive board to consist of six members shall be elected at the first election after the adoption of this constitution. The first two members elected shall hold their office for a term of three years, the next two members shall hold their office for a term of two years, and the last two shall hold their office for a term of one year, and at each annual election thereafter two members of this board shall be elected to serve for a term of three years. The president and secretary of this society

shall be ex-officio members of the executive board. The secretary shall be elected by the executive board at its first session after the close of the annual meeting, and hold his office for one year.

Article V.—The President.—The president shall call and preside at all meetings of the society and, under the direction of the executive board, have a general superintendence of its affairs. In the absence or disability of the president, the executive board shall select one of vice-presidents to act as president pro tempore.

Article VI.—The Vice-Presidents.—The vice-presidents shall have the general supervision of all horticultural interests in their respective districts, and as such constitute a general fruit committee and make a report to the society at its annual winter meeting and recommend a list of fruits succeeding best in their districts. In consideration therefor the society shall pay the traveling expenses incurred in their attendance at said meeting.

Article VII.—The Secretary.—The secretary shall keep a full record of the procedings of the society and of the executive board. He shall receive and pay over all moneys collected from members, or otherwise, to the treasurer, taking his receipt therefor. He shall, under the direction of the executive board, conduct the correspondence of the society, have charge of its books and papers, prepare its reports for publication and attend to their distribution. He shall be ex-officio librarian of the society. He shall receive for the necessary expenses of reporting the meetings, postage, stationery, printing, office rent, assistance, salary, etc., such sums as the executive board may vote therefor. He shall make a report of the work of his office at each annual meeting.

Article VIII.—The Treasurer.—The treasurer shall receive and hold all funds of the society, and pay out the same only upon the order of the president, countersigned by the secretary. He shall give such bond as the executive board may direct, to be approved by the president and filed with the secretary. He shall make a report of all receipts and disbursements of his office at the annual meeting, and at any other time when called upon to do so by the executive board.

Article IX.—The Librarian.—The librarian shall have charge of the library and report its condition at the annual meeting.

Article X.—The Executive Board.—The executive board shall, at their first meeting after the annual election, elect one of their members chairman, who shall call and preside at all meetings of the board and, as such officer, endorse all bills audited by the board. They shall have general charge of the affairs of the society, and make a report in detail at each annual winter meeting. They may call a meeting of the society at any time they deem advisable, giving at least fifteen days notice through the monthly publication of the society or by mail service on the members. It shall be their duty to audit all bills before they shall be ordered paid by the president and secretary. They shall prepare a program for each regular meeting of the society, to be issued at least two weeks before

the date of such meeting. They shall appoint annual committees on fruit list, seedlings, nomenclature, small fruits, apples, vegetables, flowers and such other subjects as they deem best. They shall fill all vacancies occurring in the offices of the society by appointment to hold good until the next annual election. They shall have full care and disposal of all funds in the treasury of the society, and shall expend the same in such manner as in their judgment shall best promote the interests of horticulture in the state. They shall serve without compensation, but be entitled to their expenses in attendance at the meetings of the board or society.

A meeting of the executive board may be called by the chairman at any time he sees fit or upon the written request of any two members of said board, due notice being given either in person or through the mail to each member thereof. A majority of the board shall constitute a quorum for the transaction of business.

Article XI.—Meetings.—The society shall hold two regular meetings, annually, one commencing on the first Tuesday in December, to be called the annual meeting, and the other in summer at such time and place as the executive board may direct.

Article XII.—Quorum.—Ten members shall constitute a quorum at any meeting of the society.

Article XIII.—Amendments.—Amendments to the constitution or by-laws may be enacted by a vote of two-thirds of the members who are entitled to vote thereon present and voting at any annual meeting, on two days notice of said amendment being given in writing.

My pickers are each given a number. Their names and numbers are entered in a pass book and each is required to sign his name to a printed berry ticket containing printed rules, which specify that all work shall be done quickly and neatly. No fussing, swearing or playing is allowed in the berry field, and 25 percent of wages is held back till the close of the season. Any one discharged for misconduct or who quits the job before the work is finished, loses the 25 percent. On going to work each picker is furnished with a picking stand and seven quart boxes and also given printed slips containing their number, one of which the picker is required to deposit in the bottom of his box. This way each picker's berries can be identified and traced. This keeps them all on their guard to do good work. When the boxes are filled, the pickers bring their berries to the packing shed and get their credit, which is always punched in the tickets kept by them. When the amount of $1 is punched, then a new ticket is issued.

THE NORWAY POPLAR.

E. G. CHEYNEY, ASSISTANT IN FORESTRY, UNIVERSITY OF MINNESOTA.

A tree suitable for windbreak or lawn planting, of rapid growth, perfectly hardy and free from the dirty, objectionable habits of the willows and cottonwoods, should be of interest to all Minnesotans, especially those who live in the prairie sections. The Norway poplar, brought into the country by an unknown pedlar and of unknown origin, would seem to be such a tree. Hearing some rumor of the tree, the writer made a careful study of it on the farm of Mr. Emil Sahler, Waseca, Minn. Mr. Sahler kindly explained his methods of handling the cuttings and gave the history of the plantation on his farm.

Norway poplar grove, ten years old from the cuttings and forty-five feet high. On farm of Emil Sahler, Waseca.

The tree is evidently a form of the staminate cottonwood, but of exceptionally rapid growth, good form and fine wood fibre. The cuttings do not start readily unless soaked in water for about six hours previous to setting out. Cuttings started in this manner in May had by August attained a height of four and one-half to six feet. Those a year older were from ten to twelve feet high. One hundred and sixty-seven eight-year-olds situated on the brow of a hill, a rather dry location, spaced four feet apart each way, showed an average height of thirty-five feet and an average di-

ameter at breast height of 5.26 inches. One hundred and ninety-six ten-year-old trees planted two by four feet on lower, moister ground had made an average height growth of forty to forty-five feet and an average diameter at breast height of 5.62 inches. The lower relative diameter of this group is due to the crowded condition of the stand. Twenty-nine of the ten-year-old trees which were transplanted when three years old to a fence row and spaced twelve feet apart showed an average height of fifty feet and an average diameter of 9.54 inches, the largest being sixty feet high and having a diameter of 11.6 inches. None of the foregoing were cultivated after the first two years.

Norway poplar grown in the open.

Four fourteen-year-old trees which were widely spaced and well cultivated had an average height of sixty-four feet and a diameter of 13.9 inches.

Forty-six sixteen-year-old trees planted in a fence row around the house in the shade of some silver maples and never cultivated, showed an average height of fifty feet and an average diameter at breast height of 9.4 inches, the largest being 11.7 inches.

The growth of these trees under various conditions shows the extreme susceptibility of the tree to cultivation and to the supply of light. The growth is good in every case, but a little cultivation

and plenty of light increases it remarkably. It has so far taken on a cleaner and straighter form than most cottonwoods, and the wood seems to be denser and of a little better quality.

Not enough experiments have been made with this tree for us to know anything definite in regard to the ultimate use of the tree or of the wood, but the trials which have already been made speak well for it. Its family name is the only thing against it.

Table Showing Growth of Norway Poplar on Emil Sahler's Farm, Waseca, Minn.

No. trees	Age years	Spacing feet	Ave. Hgt. feet	Ave. D.B.H. in.	Max D.B.H. in.	Situation and treatment.
	3-12	½	4½-6			Cuttings planted in nursery rows.
	1 3-12	2x4	10-12			Cultivated.
167	8	4x4	35	5.26	9.0	Cultivated first year. Dry hill.
196	10	4x2	40-45	5.62	9.6	Cultivated first year. Low moist ground. Too close.
21	10	12	50	9.54	11.6	Planted in fence row. Transplanted at 3 yrs. old.
4	14	12	55	13.9	16.0	Aways cultivated. Good location.
46	16	12	50	9.4	11.7	Planted in fence row under silver maples, no cultivation.

Dahlia tubers should be dug immediately after the first heavy frost, and the stems cut off about three inches above the tuber. Store them in a cool, dry, dark cellar. A good way is to place them on the cellar floor and cover them well with slightly moist sand or soil, allowing it to shake down among the roots. Where only a few tubers are to be kept, they may be put in a small box and treated in the same manner. A piece of heavy paper fastened to each root will serve to distinguish varieties. If not allowed to get wet, the dahlias will keep in good condition until planting time.

BREEDING FOR HARDINESS.

PROF. ANDREW BOSS, ST. ANTHONY PARK.

Minnesota has been noted for her efforts in plant breeding since the beginning of her career as a state. When Peter M. Gideon chose to invest the last two dollars he possessed for apple seeds rather than for clothes for himself, plant breeding received a vigorous upward lift. Did it ever occur to you that had he been contented with a dollar's worth of apple seeds, or even with a dollar and ninety cents' worth, we might never have enjoyed the flavor of an apple from a hardy Wealthy tree. Harris, Lyman, Elliot and others have been instrumental in advancing the horticultural side of plant breeding. Field crop breeders have been hardly less active. D. L. Wellman has been for many years an improver of wheat by selection, and some varieties of grain of considerable value have come from his hand. Corn breeding has received attention from many sources, and, as a result, this important crop is grown fifty to seventy-five miles farther north than was possible ten or fifteen years ago.

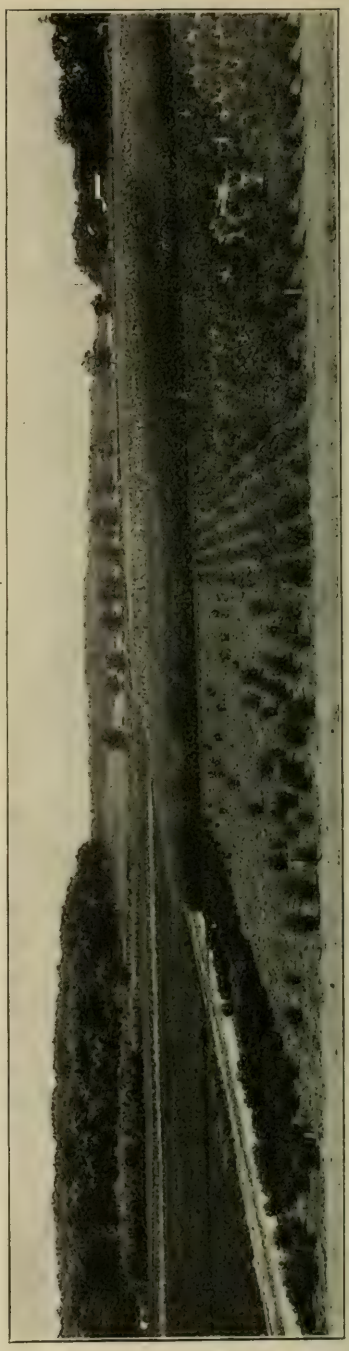
It is perhaps through the work of Prof. W. M. Hays, however, that cereal crop breeding received its greatest impetus. Through the production of No. 169 wheat, No. 105 barley, and No. 25 flax, the public has become acquainted with his work, and enough has been added to the yield of the wheat, barley and flax crops of the state to support experimental plant breeding for a quarter of a century or more.

At the Experiment Station we are growing annually, 700,000 to 800,000 individual plants, covering seventeen or more different cereal and grass crops. All of these plants are grown from single seeds planted by hand and are brought under individual observations and records kept of 10 per cent or more. These records deal with yield, strength of straw, rust resistance, hardiness and such other characteristics as are likely to prove useful in the development of plants of economic value. The work is done largely by hand and is laborious and exacting, but the results reached in the past offer great encouragement for its continuance. A bushel or two more of wheat per acre than we are getting, a stiff strawed oat that will stand up on rich land, or a winter wheat hardy enough to stand our severe winters and increase our wheat yield five to ten bushels per acre, would prove to be worth the cost of labor and expense many times over.

The problem in our work always has been and always will be *to find that particular individual plant* that has the desired char-

acteristic and the *ability to transmit this characteristic to the progeny.* It is for this reason that we have planted thousands of seeds where hundreds only might have been planted. It is why we have planted acres of ground to promising strains of plants under severe conditions and why we have grown thousands of wheat plants under the most severe exposure to wheat rust and other plant diseases. The one individual plant that has the power to resist rust and at the same time the power to transmit this quality to its progeny would be worth millions of dollars to the wheat growers of the Northwest. Is there such a plant, may rightly be asked? I believe there is. Just as some men resist smallpox, yellow fever and similar diseases, or as certain hogs resist cholera when all about them are infected, so we may find wheat plants that resist the ravages of rust, entirely or nearly so, or apple trees that resist blight.

We have already noted marked differences in this respect in our wheats that have been developed from single seeds from carefully selected stocks, and the work is only in its infancy. Enough has not been done, however, when the individual



Experiments with alfalfa in the foreground. At the left may be seen a few scattering alfalfa plants that have survived the rigors of the winte and will be made the foundation of hardy strains.

plant has been selected. The progeny of this plant should be carefully followed to learn whether or not it is transmitting the qualities desired. Performance records are destined to play just as important a part in plant improvement as they have in the development of our American trotter or our Guernsey cow.

Scientific plant breeding is more than a matter of observation, it is a matter of observation, study and records—records and then more records.

The greatest field for improvement in hardiness of plants probably lies in what may be termed natural selection. Plants grown under normal conditions and in large numbers offer opportunities for selection which may be the source of much improvement. As an illustration of this fact may be cited the case of our No. 25 flax, which has a well established reputation for a yield of three bushels more than the common strains, and descends from a single plant selected from a large number. Another strain descending from a single plant selected from a large field has become the mother of a variety of flax with fibre eight to ten inches longer than the original variety. It is this knowledge that gives hope to our efforts to produce a hardy variety of alfalfa, hardy clover plants and a variety of winter wheat hardy enough to become at least as sure a crop as our spring wheat has been. It is believed that some progress has already been made in these directions. In the early nineties, the attempt was originated by the selection of a few surviving clover and alfalfa plants that had withstood for some reason the severity of the winter when the acres of plants surrounding them had been winter-killed. These plants were taken up by hand and transplanted to small plots where they could be preserved and seed secured with a view to raising individual plants again and studying individual ability to resist cold winters. These strains are still in our nursery, under nursery stock numbers, and twice or more have been severely reduced by winter-killing and again built up. We believe we have hardier sorts than we started with and will continue our efforts, if permitted, until alfalfa and clover are sure crops on every farm in Minnesota.

With winter wheat we have tangible evidence that progress has been made. The method employed has been much the same as with the alfalfa and clover. In 1896 I personally transplanted from a two-acre field, that had been sown to winter wheat the year before, twelve or fifteen plants that had survived the winter and were the only ones I could find in the field. Six of these proved to be rye plants, the balance matured winter wheat seed and went into

our nursery, where they have become the mothers of strains that promise much for the winter wheat industry of the state. Some of these are now in our field plots and appear to retain their hardiness to quite an extent, tho further trial is required to demonstrate their real value.

For the past three years we have had but little trouble from our winter wheat winter-killing, either in nursery or field. In 1905-06 the nursery stock was severely injured, tho few of the most promising sorts were lost, by a freezing rain which entered the crown of the plants and smothered them. While it was a severe trial, we regard it as a blessing in disguise, as it has again given us the desired opportunity to select the hardy individual plants and to more effectively guard against losses from similar sources in the future.

The surviving clover plants from a half acre field. They will be used as foundation for hardy varieties.

While what I have said on the subject of hardiness may not have much to do with horticultural plants, the principles are the same, tho the method of application may be different. I realize that it would take more land and longer time to produce apples, plums and peaches than to produce wheat or flax. That there may be more difficulty in guarding against cross-pollination and other contaminating influences is true, but the importance of large numbers from which to select is just as great, and where the selections are under conditions of hardship and exposure the reward is just as certain.

The vital point in plant breeding is the opportunity for selection. Many times this is found under natural conditions. If thus found, it should be made use of. At times, cross-breeding may be resorted to induce variation toward certain desired lines, but by far the

greatest improvement in hardiness will result from continued selection or by a cross followed by long continued selection of plants grown under severe exposure and climatic conditions.

In my opinion, the ambitious plant breeder spends too much time and money in searching other states and countries in the hope of finding something created by some one else that may suit his requirements. The same time and money expended in an honest effort to do something himself with the material at hand would result in more rapid progress.. New things may be needed and doubtless are useful in many ways, but in gazing at the stars above the horizon we often neglect the daisies at our feet. We in Minnesota who are searching for hardy trees and plants should not overlook the fact that nowhere in all out-doors do the same climatic conditions exist, nowhere else is the same character of soil found nor the same rigorous winters. Even in plants coming from regions of greater cold, time is required for adaptation to our own exacting conditions. We have found that even within our own state, time must be given for a variety of corn or of wheat to become adapted to its surroundings, and that it improves when continued in a locality for a time if given intelligent care and selection. Of the thousand or more varieties of wheat brought to University Farm from various sources, only a few have done well from the start, and nearly all that are suited to our conditions have made improvement under continued care and growth. All that have become prominent in any way have been originated in near-by states or within the state.

This suggests the thought that it is important that every man, woman and child be made acquainted with the principles of plant breeding. That they should be awakened to the possibilities that lie about them in every direction, and that they no longer depend on the United States Government to find things for them nor on their State Experiment Station to create new varieties for them, but that they get to work with a will and produce themselves that which is best suited to their farms and gardens, and that which no one else can produce so well. The work is pleasant and fascinating to any one acquainted with it, and even if varieties of economic value are not built up by every individual the knowedge gained from the study is sufficient reward.

The President: We should always be prepared to be astonished, and yet I am bound to say that I have had several surprises sprung upon me in the last few years. We have discovered a great acquisition along horticultural lines in Mr. Harrison of York, Nebraska. Then there is Prof. Thomas Shaw, I never knew he thought

anything about horticulture. I did not know that he would know a dish of strawberries when he saw it. And now here comes Prof. Boss with this valuable information to horticulturists. I have never known him as anything but an enthusiastic instructor along the lines of animal industry, and now he comes with this splendid address with regard to plant breeding. We certainly are to be congratulated upon the acquisition of such valuable men to our ranks.

Mr. C. G. Patten (Iowa): I wish to say in reference to the paper we have just listened to that I am very much pleased to know that attention has been directed toward the improving of such valuable plants as clover and alfalfa, and to note the reference made to other selections and experiments made with other plants by Prof. Boss. We are sure of making advance in the growing of clover and alfalfa and many other things. I might refer to the cotton weevil that nearly destroyed the cotton crop in the south, and in many instances it destroyed the entire crop, but by observation and selection they have succeeded in breeding a plant which is prosperous in sections where the cotton crop is a very important one—and it is to the whole south—which is immune to the cotton weevil. A few years ago I was in Dakota, out in the Jim River Valley at the time when corn was about eight to eighteen inches in height. We had a very severe frost, and corn was badly cut on low lands. In passing by a field I noticed there were numerous instances where the entire hill had been killed, but there were instances where there were single stalks in a hill of from three to five that had almost entirely escaped frost, while the others were entirely killed. The thought occurred to me that if I were an experimenter at one of the agricultural experiment stations I would certainly save the seed from those stalks that had escaped the severe freeze with the idea in view of increasing the hardiness of that corn plant, and I believe if that were systematically followed we could increase the hardiness of the corn plant so it would resist frost from five to ten degrees more than any corn plant now known to exist.

"He called for a city beautiful;
  He shouted it day by day;
He wanted a city where noise was not,
  Where the spirit of art should sway;
He wanted a city that should be fair,
  Where filth might never be seen,
And forgot, in spite of the zeal he had,
  To keep his back yard clean."

THE CRAB ROOT AS A STOCK FOR THE MINNESOTA ORCHARD.

J. FLAGSTAD, SACRED HEART.

The nurserymen present will agree with me that the subject is of too large a magnitude to be discussed successfully in the time allotted for this paper, nor is it possible to enter into the details of my experience along this line.

In the discussion of this subject I think a good many members of this society will admit that this is a problem of vast importance to the horticulturists of Minnesota, a problem that has to be solved before we can make Minnesota one of the many successful apple producing states.

I have been invited to write a paper on this subject, and although I am what they call a crank I will admit that there are certain things which would be of disadvantage to us nursery people if we should carry out the plan to use hardy crab roots for stock purposes on a very large scale, owing to the limited quantity of seed available. We know that in either case one of the parties will lose; if the nurserymen uses hardy crab roots for propagation then they ought to get a bigger price for their trees on account of the increased cost of production; on the other hand the customer loses by getting trees grafted on inferior roots, even if he could get the trees for a little less than those grafted on a hardy crab stock.

Is the agitation for a hardy root stock really as important as we consider it to be? In my experience I have found that a large number of the apple trees in our state have been grafted on stock that was unable to withstand test winters such as those of 1884, 1898 and 1899. I have also found that after trees had been bearing fruit a few years and after they would have been supposed to have set roots of their own—those trees (in this case Wealthy) in the spring would be as dead as a doornail.

You are all, no doubt, more or less acquainted with the talk that was current here some thirty years ago about the uselessness of attempting to raise eatable apples in this state, even for private use only, to say nothing of raising fruit for commercial purposes. In my locality people sincerely believed that the cause of a tree's death was to be sought in the soil, that the quality and make-up of our soil was such that when the roots came to a certain depth they would inevitably die—no one thought of looking for the failure in the tenderness of the roots themselves. But being like the stubborn mule in this respect, I kept on bucking and buying trees, being un-

willing to give up fruit raising, and although results have not always come out as anticipated still the thirty years' experience has not been in vain.

I started my orchard with forty-eight trees and planted with one or two exceptions from one to four dozens of apple trees every year, having after seventeen years' work only 164 living.

In determining the hardiness for root stock of our acclimated varieties, we are beset with one difficulty, and that is the long period

The Flagstad residence and lawn.

between our test winters, as stock grown from seed of the acclimated kinds will survive the average cold winters of this state.

It is now thirty years since we began to plant seed, but owing to the fact that we bought the apples we did not know what varieties they were—presumably they were raised in a milder climate than ours, for in the spring of 1884 the seedlings had all left for the happy hunting grounds.

We began again as soon as we got seed of our own orchard, with a carefully kept record—also using plats and stakes—of the

different varieties in order to determine which were the most vigorous and hardy. Our first difficulty was to distinguish which were the best, as they all seemed to be doing well. We also at the same time bought of a local nursery 5,000 grafts, mostly Wealthy and Duchess. On account of the dry season a number of them died, but the majority of them did finely and made wonderful progress the next season.

In the spring of the third year they sprouted nicely, but after a little while the leaves began to turn yellow, and investigation showed the majority of them to be dead. The fourth year, with the exception of a few Whitneys, there was not a tree alive of those 5,000 grafts.

After having discarded certain varieties of our homegrown seed as entirely useless for root stock, we had six different varieties left. Among these were the Minnesota, which in the year of 1896 was very much affected by the cold.

In the year of 1898 and 1899 we had 18,000 nice grafts, set out in the spring of 1898 and grafted on the six following varieties as stocks: Duchess, Wealthy, Minnesota, Siberian, Early Strawberry and a variety of small red crabs. Of Minnesota, as above mentioned being affected by the cold previous to 1898, the majority froze in 1898, and the same was the case with the Duchess of Oldenburg, of which we had over 6,000 grafts. The Wealthy stock seemed to do a little better, as only eighty-five per cent were lost. Of Early Strawberry ninety-two per cent of the roots froze. The Siberian came out with a loss of only twenty-eight per cent that year. But there is one disadvantage with the Siberian, the majority of the stocks do not seem to be able to develop in harmony and as fast as the other parts of the tree; besides this it is more or less affected with rootgall, or rootknot. The sixth variety, the small red crab, which had at all times proven to do well, also stood the test of 1898.

We tried an experiment with the Siberian and this red crab by letting them stand side by side during the winter, and then taking them up and grafting them by the piece-root system in the spring. In the year 1896 the Siberian was so much affected by the cold that when the root was cut the wood was of a dark grayish color, and every graft made on those roots died; but the roots left undisturbed in the seed beds lived and had by next fall regained the white color in the wood. This showed the Siberian to be quite a hardy variety. On the other hand, we have not in one instance found a root of this small red crab to have lost the color of the wood after it had been standing out during the winter.

In the year 1903, having planted some of our seed beds too thickly, we had to dig some of the largest seedlings. After having pulled the largest roots, the smaller ones were left almost pulled out of the beds. In the spring, thinking it would be interesting to see how it would turn out, we grafted some of those roots which had been standing without any protection of snow whatever,—the scions had also been out during the winter and were of the same varieties of which my general stock were grown. Although some died the experiment was fairly successful, considering the circumstances and the small size of the seedlings.

This crab root is very vigorous and has developed in harmony with the other parts of the tree, regardless of what variety we have grafted on it.

Since the conclusion we came to in the year 1898 and 1899 we have limited the propagation, using since that year stock of this small red crab exclusively for grafting, although we carry on experiments with different kinds we have not tried. I want to call attention to the fact that by mulching or covering the grafts many of the trees that died of those other five kinds might have survived the winters, but so far we have never covered any of our grafts —some even having been left in the open without a windbreak on any side.

In regard to this red crab: We know so far—in the localities where it has been tried—how hardy it is, but we also know that it may get cold enough in certain localities to freeze out any kind of stock, and we have, in order to test it in other places, sent out a lot of trees into the western part of North Dakota, and another lot 350 miles northwest of Winnipeg, Canada.

There is another thing I want to mention in this connection and that is, about getting a tree on its own roots. In getting a tree entirely on its own roots, even if it was practicable, would it not in the long run tend to devitalize the variety? Propagating in that way would practically be the same thing as to raise the trees from cuttings.

Every argument is in favor of sexual reproduction. Now the seedling on which the scion is grafted is a result of sexual reproduction, and it seems to me that a tree grafted on such a hardy seedling stock ought to be a better tree than one grown only on its own roots.

In experimenting with roots for finding out the degrees of hardiness of the different varieties, it is necessary to plant all at the same time, and under the same conditions and qualities of soil.

Owing to this variation in the quality of soil on high and low land, a person will by trial of a long period even find that he may come to a wrong conclusion as to results. Our land is a little rolling, and if it had not been for the fact that all of the rows were of the same length we should have been misled, so different were the results.

For obtaining a quick test we have found it to be a good way to plant in soil containing alkali, as by so doing we have found out the difference between the hardiness of the roots, while when they were planted on high land at the same time it would not be possible to see that the cold had any effect on them at all.

Mr. J. O. Flagstad: I want to call your attention to one of the roots here (exhibiting a part of the stock and one of the roots). He just took one of the trees at random, he did not take the best trees.

Mr. A. J. Philips (Wis.): What is the age?

Mr. Flagstad: Three years.

The President: The roots are below the graft?

Mr. Flagstad: Yes, sir.

Mr. Elliot: What is the scion?

Mr. Flagstad: Okabena.

Mr. Flagstad stated he had the apples examined by Prof. Hansen, and he holds the opinion that those small red crabs are a seedling.

Mr. Phillips: What is the soil this tree grows in?

Mr. Flagstad: A black loam on the surface with a clay subsoil.

The President: This is a very interesting and valuable paper and is worthy of a full discussion.

Mr. C. A. Johnson: Why would not the native wild crab found in southern Minnesota and Iowa make a good stock to graft upon?

Mr. E. M. Sherman (Iowa): My impression is that it is too slow growing, and the union would not unite properly.

Mr. Philips: I have tried it, and it seems to lack vigor; it grows too slowly.

Mr. R. A. Schutz: The tree grows too fast for the roots, and thus becomes top-heavy.

Mr. Geo. J. Kellogg (Wis.): It would be difficult to get seedlings, and they do not take readily to the scion. It would seem that there was about one out of a thousand that would do well. If that is the character of that little seedling crab, it is certainly wonderful. That is the finest show of roots to produce growth that I have ever seen.

The President: Do you consider that a fair sample of the roots as they develop, Mr. Flagstad?

Mr. Flagstad: I have seen thousands of those trees, and they are just about the same, all of them just about the same quality and the same size at that age, three years.

Mr. G. A. Anderson: I have planted several thousands of these trees, and they are all about the same.

The President: How long have you had them planted?

Mr. Anderson: Three years, and some of them were four years old when planted. They are making a very fine growth.

Mr. Husser: If you were to take the stock of the wild crab apple as it grows in the woods and graft upon it a scion of a tender variety of apple and let it grow in the nursery two or three years, or until the union was completed, and then transplant that tree into the orchard, if the scion had a well started root would it make any difference in the growth of the tree even if the crab apple roots should stay back?

The President: I think Mr. Elliot can answer that question.

Mr. Elliot I cannot answer it because I have not had experience, but I wish some one who has had experience would answer it.

Mr. W. J. Moyle (Wis.): In that case the scion would throw out roots, and the wild crab root amounts to nothing. As soon as the scion throws out roots for itself, the crab apple root immediately dies off. Now, in regard to these crab apple roots. I had occasion to buy trees from a Minnesota nursery, I think it was the Minnesota crab, and those trees have thrown out roots just like that, and the indications were they were roots from the scion. However, they all had roots similar to these. They were the most awkward things to pack I ever saw. That is the characteristic of the crab apple.

Mr. Philips: I asked the question what the soil was in which these trees grow for the reason that we have in northern Wisconsin, on what we call the Peninsula, the ideal fruit land of the state. It was originally covered with pine and maple timber, the limestone comes in some places to within two feet of the surface, and in those places you will find that the young trees are damp at all times during the summer. Now, the root of the tree that grows on that ground is a root just like this, with some strong leaders and a great many fibrous roots. When I planted the trial orchard at Wausau I obtained trees from different nurseries in the state, and among the trees which I planted were some which came from this same nursery, but when we took that tree from the soil where it originally grew so well and put it in a different soil it did not do so well as trees taken from the same soil into which they were again planted. They grew more slowly; their root system did not seem to catch on to that heavy soil, but it would do very well in a lighter soil. I would like to ask the young man who said he had planted several hundred of these trees whether they were planted in similar soil to that in which they originally grew.

Mr. G. A. Anderson: They are only about eight miles apart.

Mr. Philips: No limestone in the soil?

Mr. Anderson: I don't think so.

Judge Moyer: I know the locality where these trees grow, and they are on a glacial drift formation, and it is one of the richest soils that can be found in which these trees are growing.

Mr. Philips: If I were going to plant those trees in some other soil I would do some experimenting.

Mr. O. W. Moore: A number of years ago I grafted five hundred scions. I put them on crab roots, scions of both Hibernal and Virginia crabs. I gave them a seven-inch root and also a seven-inch scion and set them one bud above the ground. I carried them two years in that way. Then I grafted upon these Virginia crabs and Hibernal, about eighteen inches from the ground, Wealthy, Malinda, and so on, all the varieties which we have been propagating. I have been growing them two years. Last spring I dug up a few of them, and that crab root was almost invariably a tap root with very little if any branches and the scion had begun to put out roots above the union.

Mr. Husser: I would like to have Mr. Philips state whether it is proper to transplant trees from a rich soil to a poor soil, or whether it is preferable to transplant them from a poor soil to a rich soil. What I mean is whether he has ever noticed any difference in growing apple trees when he has taken them from a poor soil and planted them in a very rich soil or vice versa, whether they were just as good as when planting them in the same soil in which they originally stood.

Mr. Philips: My experience in growing trees on sandy soil is that they will not do well if they are set in another soil. We had some experience along that line at Trempeleau, and those trees were not a success when put on heavy soil.

Mr. Geo. J. Kellogg (Wis.): I would like to mention the fact that when Mr. Stickney and Mr. Kimbark were growing trees forty-five years ago, they tried the crab root thoroughly. They said it tended to dwarf the trees; that was the only fault they found with the crab root.

DIETETIC VALUE OF FRUITS.

MISS J. L. SHEPPARD, ST. ANTHONY PARK.

All people, and especially all girls and women, should avail themselves of the rare opportunities now offered for learning the composition, digestibility and comparative food and money value of different food materials. The public has never been more active in its investigations on the subject of right lines of education for the young than now. An effort is being made to find just how the public schools can best supplement home training. The desire is to have pupils follow those lines which will, while forming right intellectual habits, wholesome tastes and active interests, give the greatest possible amount of useful information.

The United States has for a number of years been conducting investigations on the subject of the nutrition of man. These studies have been made under a variety of conditions. The results are published from time to time, and some of them are of such a popular nature, and so interesting and instructive, that they might with profit be used as a portion of the reading matter in the homes, while others, notably those which have to do with pure foods and the chemistry of special groups of foods, might well be used by teachers to supplement other studies. That there is a very close relation between food and virtue, and between food and health, is now a general conceded fact. Both boys and girls should be taught in homes and schools that proper food and right habits of eating and drinking have much to do with maintaining good health, cheerful temper and right moral tone.

Children should be so impressed with the importance of right living that they will continue to study and practice the proper use of food, clothing, etc., during life. Teachers of botany could easily emphasize a few facts about the hygienic value of fruits, the relative economy of fruits and other foods, etc., and this would aid much in applying the truths learned in school to the solution of some of the food problems in the homes. In botany, students learn that all fruits are the seed bearing portions of their respective plants. Chemical changes are constantly taking place in fruits as they develop and ripen, and these continue without cessation after maturity until the fruit decays. These are interesting, instructive and useful facts. Some fruits improve by lying for a short time after ripe, others deteriorate rapidly after becoming mature, and all change perceptibly in a comparatively short time. That is, the new chemical bodies which nature forms before the fruit matures improve the color, fla-

vor and food value of the fruit, while those formed after maturity cause a perceptible deterioration almost immediately in some, as strawberries, raspberries and cherries, while others improve by lying for a short time, as apples and grapes.

Children would be interested in knowing that green fruit contains no chemical constituent not found in ripe fruit and that the difference in color, texture and flavor between a green and a ripe apple are due to the proportions in which these chemical constituents occur. Girls especially will appreciate the fact that under-ripe fruit usually contains the pectin bodies, which are the jellying principle of fruit, in larger amount than ripe fruits do, and that apples which are a little underripe can therefore be used for jelly making, while ripe apples, grapes, etc., on account of the greater amount of sugar contained, are better for making fruit juices, vinegar, cider, etc. If girls learned in school that some fruits, as cherries and peaches, contain so small an amount of pectin as to render jelly making with them difficult, they would not be compelled to learn by experience that it is well to can cherry juice while preparing early cherries and use with currant juice later, thus obtaining a firm jelly with a cherry flavor which though not exactly the same as pure cherry is much better than an imperfectly jellied jelly. If late cherries are used, the currant juice may be canned to use with them.

A woman who knows that peaches contain little pectin and do not make a firm jelly can readily have nice, firm, fine flavored jelly by combining peaches and sour apples. Farmers Bulletin No. 203, which treats of canned fruit, preserves and jellies, may be had for the asking and will aid inexperienced housekeepers much in feeling sure of results in that, to many, uncertain task of making jelly.

Bananas are almost universally relished by children, hence pupils would be interested and probably benefited by learning that if they ate unripe bananas they might expect much the same results as if they had eaten raw potatoes, since these each contain starch. Unripe bananas when dried yield a powder or meal rich in starch. When this fruit is fully matured so much of the starch has been changed to sugar that ripe bananas dried show a sugar content very similar to that of dried figs.

In our grandmother's day girls learned to judge of the quality and use of different food materials by the knowledge which they gained in handling them when canning, preserving, making jellies and marmalades, as well as when preparing different dishes for the table. Little by little such work has been given up, until now few, if any, home manufactories exist in this country. People on farms, in

hamlets, villages, towns and cities, have for several years depended almost wholly on the large manufactories for food materials. What is the result? There is a "national pure food" law to prevent the introduction of impure substances into our food materials. Women helped in securing the enactment of this "pure food law." Will they not necessarily help in executing it? In order to be successful in this, women must be judges of quality in food. How are the succeeding generations to learn to judge food material? It must be by the combined effort of home and school. The pure sciences will avail pupils much more if the parts which can be applied to home duties are especially pointed out. The opportunity for applying these principles should be given at home. It is some trouble to can and dry fruits and vegetables, make jellies, marmalades, etc., but it is a pleasure to know that the rows upon rows of jars on the pantry shelves contain food materials which are as toothsome as the wealthiest can buy, and that the contents of these cans are free from all impurities.

The combined effort of home and school is needed to lead young people to realize the extent to which health is injured by the use of impure and improper food. Science has entered the field of the home makers' duties and offers useful information all along the line of woman's work, but unless young women are taught how to apply this knowledge it will avail them little. Whoever culls practical truths, and shows how they can be applied in the home, does at least a little toward ameliorating the condition of mankind.

The problem of the rational feeding of men is one of the most important that the successful young house-wife of the future must solve. Girls should be taught the conditions and laws governing home making if they are to successfully carry on the work which the times demand of women, viz: Make homes attractive for husbands, see that the family is properly clothed and nourished, build character in both boys and girls, instil habits of industry, self-control, courtesy.

Women must build on a foundation of knowledge in order to insure permanent happiness and success in any phase of home work, but this is especially true of the subject of foods, since health depends so largely on right living. In order to be able to use so simple a thing as fruits properly one must understand them in several particulars:

1. The composition of fruits should be understood.
2. Effects of ripening on composition and food value.
3. Place of fruit in the diet.
4. Digestibility of fruit.

5. Relative economy of fruit and other foods.
6. Comparative digestibility of raw and cooked fruit.
7. Probable effect of eating over-ripe and decayed fruit.
8. Relation of green fruits to illness, especially in children.
9. Effect of eating unwashed fruits raw.
10. Medicinal value of fruits.

Fresh fruits are dilute foods; that is, they contain a large amount of water in proportion to the nutritive material present. Fruits which contain eighty per cent or more of water are sometimes called flavor fruits, and those with less water, food fruits. Strawberries, raspberries and blackberries belong to the first class and bananas, figs and dates to the second. Preserved fruits and raw dried fruits are of course more concentrated than fresh fruits of the same variety.

Fruits generally contain protein, mineral matter and fats in small amounts, but the bulk of the nutritive material is carbohydrates. The carbohydrates of fruits consist of sugars and so called pectin bodies, with, in the case of some under-ripe fruits, more or less starch.

Sugar occurs in fruits in three forms, viz., cane sugar, grape sugar, fruit sugar. Grape sugar (glucose) and fruit sugar (levulose) usually occur together and in about equal quantities. These are often called invert, or reducing, sugars. The amount of sugar varies with the stage of growth and the degree of ripeness of the fruit. According to a summary published some years ago, invert sugar ranges as follows in the fruits named below (in round numbers): from two per cent in large early apricots to fifteen per cent in grapes and a variety of sweet cherries. Strawberries, gooseberries, raspberries and apples are reported as containing about half that quantity. Cane sugar ranges from less than one per cent in lemons to fourteen per cent in a variety of plums, and bananas contain eleven per cent. Cane sugar has been reported as occurring in amounts larger in proportion to the grape sugar in such fruits as sweet apples, sweet pears and some varieties of grapes. The per cent of grape sugar in some grapes, however, has been reported as high as eighteen to thirty per cent.

The average amount of sugar is higher in dried than in fresh fruits and in some cases has reached thirty-two per cent in prunes, fifty-four per cent in Zante currants, sixty-one per cent in raisins, 48 per cent in figs and sixty-six per cent in dates. Fresh fruits are therefore directly comparable with green vegetables as regards food nutrients contained, but as regards flavor they are in a class by

themselves. They are the "pleasure givers," the food materials which make the mouth water and enable the thrifty housewife by their use to serve meals which are much better relished, although there is little difference in cost between these and plain meals if the fruit used is grown at home. The above figures show that fruits should not be regarded as mere accessories to the diet, since they contain a goodly amount of heat and energy giving food nutrients. Fruit may well be used to supplement foods which are richer in protein than they, such as cereals, grains, legumes, eggs, cheese, meats and fish, because they give needed bulk in a very pleasing form.

In order to obtain some facts concerning how thoroughly a diet of fruits and nuts can be assimilated, the California experiment station some time ago carried on a large number of digestion experiments in addition to dietary studies. The results of these experiments give some valuable information. Prof. Jaffa points out that it is "undoubtedly advisable to wait until more data have been obtained before making definite statements regarding digestibility of fruits and nuts. Enough has been done, however, to show that they are thoroughly digested and have a higher nutritive value than is popularly attributed to them."

On the cost of fruit, the time of year and whether fruits are grown by the family or bought at the market in small or large quantities has a marked bearing. In late summer fruits are cheaper than at some other times of the year, and they are usually exceptionally high in the spring. Apples are a comparatively economical food during the winter season, as they can be bought in quantities and when stored under the best conditions keep well, though the housewife must sort them often, culling those which show signs of decay. The value of fruits cannot be based on their cost alone. Their use makes plain meals satisfactory by rendering other foods more palatable: example, a few blackberries, a sliced peach or banana will often cause a child to relish a dish of cereal which would otherwise be declined. A small amount of jam will often make bread and butter palatable and acceptable in place of pie and cake.

Few experiments seem to be reported regarding the rapidity with which raw fruits are digested. Beaumont states that mellow sour apples eaten raw require two hours for digestion in the stomach, and that mellow sweet apples require two and one-half hours for digestion. Available data indicate that fruits compare favorably with other common foods as regards stomach digestion and that they remain long enough in the intestinal cavity for the body to absorb such materials as it needs.

Few investigations seem to have been made to determine the comparative digestibility of raw and cooked fruit of any given variety. Bryant and Milner report the digestibility of apple sauce, eaten with a simple basal ration, as follows: The coefficient for the digestibility of protein was twenty-eight per cent, nitrogen free extract 99 6-10 per cent, crude fiber 96 per cent, ash 100 per cent. This shows that practically all the energy supplied by the apple sauce was found to be available to the body. The coefficient of the digestibility of protein was low, but the total amount of this constituent present is very small and consequently unimportant.

It is generally believed that fruits and fruit sauces eaten with the meal are more readily assimilated and used in the body than those dishes in which sugar, flour, etc., are used with fruit, as in making pies, pudding and many other dishes which are used as desserts. The digestion experiments which have been made with various mixed diets do not indicate any special difference in regard to thoroughness of digestion, but in reporting these investigations it is not stated whether the food was taken at the end of a hearty meal or as a part of the needed food. Too few experiments have as yet been made to render it advisable to state with certainty whether there are actual differences in the ease and rapidity of digestion of these and other foods.

Over-ripe fruit is deemed totally unfit for food when raw, since there is always a possibility of digestive disturbances, even though the decayed portions are cut away, because the fungi which cause decay develop rapidly and may have already affected the apparently sound portion of the fruit.

Over-ripe and decaying fruit are always inferior in flavor and are more wholesome and palatable cooked than raw, because cooking destroys any bacteria which may be present, and the flavor of the fruit be masked by the use of spices, sugar, etc. Apples when at their prime have a finer flavor of their own than any combination of spices, either nutmeg or cinnamon, can impart to them, but in the spring they have lost their richness, and spices may then be added to cooked apples.

Adults generally believe that raw, green fruit is unwholesome and an almost certain cause of digestive trouble. Children know that such food sometimes causes illness and at other times produces no serious results. Two German chemists have recently carried on investigations in which chemical analyses of fruits of various degrees of ripeness were made. They also conducted digestive experiments in which raw green fruits in considerable quantities were eaten by

both men and animals. These investigators found that raw, unripe fruits are often harmful, especially to children, but that the effects depend in a marked degree on individual peculiarities.

These experiments indicate that the real danger from green gooseberries, plums, pears and apples when eaten raw is less than is generally believed. The investigators found no chemical element in the green, which was not in the ripe fruit. The injurious effects of raw, green fruit may be said therefore (as based on these experiments) to depend largely on the percentage of hard cell tissue which is likely to be imperfectly masticated and, possibly, also on the excess of acid which green fruit contains. They found that green fruit when cooked and sweetened was both palatable and wholesome. Fruits to be eaten raw should always be washed before serving, because, even though grown at home, they have been handled while preparing for the table, and such fruits as grow near the ground, like strawberries, are liable to have particles of sand and dirt adhering to them.

Investigations show that fruits which have been exposed to the dust of the street are liable to be contaminated, and cases of infection have been traced to the consumption of fresh raw fruit. Flies and other insects are evident causes of dirt in such fruit as stands unprotected in home or market.

In the United States raw fruit of good quality is considered very wholesome and is freely used, but in some other countries little or no raw fruit is eaten.

There are two reasons why raw fruit may be considered undesirable.

1. Unsanitary methods of handling or marketing may cause bacterial or other contamination.

2. Over-ripe fruit has usually begun to ferment and may for this reason be unwholesome though showing no special signs of deterioration.

Notwithstanding that all soft fruits, such as berries, lose some flavor by washing, all fruits to be served raw should be thoroughly washed. When the washing is properly done and just before the fruit is to be used, the loss in both flavor and food value is extremely small.

Ehrlick, a German investigator, found that washing fresh fruits thoroughly once in running water was sufficient to remove any microbes that might adhere to the surface, but if the fruit had stood until the naturally sticky surface was somewhat dry, it needed to be washed two or three times to ensure cleanliness. The present

method of handling (encasing in oiled paper and in paper boxes) such dried fruits as figs, raisins, currants, etc., adds to the expense of the article and excludes much of the dust and dirt of the street which was formerly a fruitful source of contamination.

As to medicinal value, fruits are generally conceded to be laxative and are for this reason beneficial to the system. They probably owe this property to the large amount of water present, to salts in solution and to the crude fiber, small seeds and other indigestible material which they contain. A few fruits, the pineapple among them, contain active ferments and are sometimes, for this reason, recommended to be eaten at the end of a meal as an aid to digestion. This is a doubtful good. The office of such foods is to so strengthen nature that she may do her work properly and well and not to act as artificial ferments.

Fruits are such attractive as well as wholesome and digestible food materials that they should be used as a legitimate part of a well balanced diet. They please the eye, sharpen the appetite and, in some cases at least, aid digestion.

Although strawberries cause distress when eaten raw by some people, and all acid fruits must be avoided by others, it does not necessarily follow that these fruits are generally indigestible. Such cases should be rgarded as due to personal idiosyncracies.

Let all who can enjoy the beauty, flavor and wholesomeness of fruit, which is one of our most attractive and delicious food materials.

Every one should encourage the home culture and use of such fruits as can be grown in Minnesota and especially the apple, which, like bread, never palls on the palate. It can be prepared in such a variety of ways that when the apple is in season little other fruit is needed. It may be baked, coddled, glazed, buttered, jellied, made into pudding, fritters and dumplings and many other dishes, but is considered to have reached the climax when made into pie.

Why is it no one ever tries
To learn who first made apple pies;
What beautiful woman and just,
First rolled and pinched and cut the crust,
And that all people her might bless
Filled it with pungent happiness.

Summer Meeting

1907.

MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SEC'Y.

As usual beneficent nature smiled brightly upon the summer gathering of this society held in Armory Hall, at the State Experiment Station, St. Anthony Park, on Tuesday, July 2nd. The weather conditions were ideal, and everything else contributed to make the occasion a successful and pleasing one. No actual account was made of the number present or that sat down at lunch, but the tables were set for 250 and, judging by the numbers that were fed later, to say nothing of the many who were in and about the place that did not participate in this function, there were at least four hundred in attendance. Most of these were from the neighborhood of the twin cities, though some were from a distance: for instance, Prof. N. E. Hansen, the horticulturist of the South Dakota Experiment Station, Miss Gertrude Cairns and her mother, from Ellsworth, Wis., and Rev. C. S. Harrison, the peony specialist, from York, Neb.

The extraordinary and distinguishing feature of the meeting was the exhibit of flowers, which occupied wide tables all around Armory Hall. Many entries had been made for roses, but the season proved too late for them, and the display of this flower was comparatively limited, but there were more than enough peonies in infinite variety to make up, and a great number of kinds of perennial flowers of every shape and color. Armory Hall with this setting of flowers was to the eye a thing of beauty, and the fragrance as well as the sight of this wonderful array of flowers was something long to be remembered.

In the fruit room there was a good display of currants and gooseberries, because these could be shown green, but the strawberries exhibit, notwithstanding the lateness of the date of the meeting, was a light one. There were comparatively few growers who had them ripe enough to show, and it proved to be the smallest strawberry exhibit that has been made at one of our summer meetings in a great many years.

There were several plates of apples shown, amongst them a number from the seedling orchard of T. E. Perkins of Red Wing, which had been kept in an ordinary out-door root cellar and were exhibited by Mr. Wyman Elliot, although not entered for competition.

A feature of special interest in connection with the fruit exhibit was the showing of seedling fruits made by Prof. N. E. Hansen, of his own origination at the Experiment Station in South Dakota, where he is conducting on a large scale a work which promises to yield very valuable results to the fruit growing interests of the Northwest, to say the least. To use his own language, he "exhibited twenty-eight varieties of his hybrid strawberry seedlings; some of them hybrids of the wild strawberry of the Dakotas and Manitoba with cultivated varieties, others derivative or secondary hybrids of these with cultivated varieties, thus making them three-fourths wild and one-fourth tame. All of these are grown without winter mulch of any kind and are representatives of over 8,000 cross-bred seedlings produced at this station. Some of these are of size sufficient for market, others are too small to be of value except for further work. Fruit was also shown of the South Dakota No. 7, a new and promising hybrid fruit produced by crossing the native Sioux Indian sand cherry with pollen of Prunus simoni, an apricot plum from China. This fruit shown was one and three-eighths inches in diameter, flattened like its Chinese parent. The pit is very small. Last year it bore for the first time on one year old trees in the nursery. In season it showed itself last year to be very early. The present specimens were grown under glass."

It was something of a disappointment undoubtedly that the extraordinary number of entries, six hundred forty-five, delayed the work of the judges so that the strawberries were not passed upon until too late to be served at the first table, and indeed had it been otherwise there would not have been enough to go around. We do not expect this situation to occur again.

After the lunch had been cleared away and seats arranged for the audience an impromptu meeting was held amidst these attractive surroundings, continuing from two o'clock until half past four, during which period a number of representative horticulturists occupied the floor and gave time to the amusement and entertainment of the audience or dealt out to them words of wisdom and experience, all very much to their pleasure or profit.

Prof. N. E. Hansen spoke first briefly of his third trip to northern Russia, Finland and Siberia. The space allotted for this report is too brief to more than refer to this interesting address. He exhibited also at that time the new fruits referred to elsewhere in this report and talked about them, answering questions as to their origin and methods of propagation.

Sen. S. A. Stockwell was called upon without notice and proved himself equal to the emergency, saying some very pleasant things about the organization and the useful work it is doing.

Mr. Clarence Wedge, our late president, spoke briefly of "special horticultural work" of the season, noting its peculiarities and some of the results of it, and referring to new experiences in spraying, etc.

Mr. E. Nagel of Minneapolis, a veteran florist and one of our old life members, spoke interestingly of the perennial flowers on exhibition, to which he had been devoting several hours in passing upon as judge.

No meeting would be complete without a word from Mr. Wyman Elliot, and he had his seedling gooseberry, the Carrie, there to hold up and demonstrate by its appearance its wonderful productiveness. Mr. Elliot showed an orange from the grove of Truman M. Smith, of Santiago, Cal., one of the most honored members of our society and who held the office of presidency in the early days for a large number of years. Though now an old man over eighty, he is still actively engaged in growing fruit in that far away region. We were interested in hearing this word from one of the older members whom we love and know so well. Mr. Elliot spoke also of the fruit breeding farm that is soon to be purchased by the state university, to be operated through the horticultural department, under the management of Prof. S. B. Green

Mr. A. Brackett, of Excelsior, had a wonderfully thrifty seedling strawberry plant, with fruit hanging thereon, to show and emphasize the necessity of securing such a berry that would winter with certainty without protection.

Mrs. Rohan was called forward by the presiding officer to speak briefly of a seedling strawberry she raised from seed taken from berries secured at this meeting a year ago and now in bearing.

Mr. Geo. W. Strand, of Taylors Falls, our treasurer, talked in a practical way about some of the perennials on exhibition, displaying the flowers at the same time and giving us valuable pointers as to their cultivation.

Rev. C. S. Harrison, referred to as the "silver tongued orator," paid a beautiful tribute to the memory of our lately deceased brother, Mr. Frank Yahnke. He told us in glowing words of the beauty of many of the flowers which can be grown in this region and left us with a full realization of the wonderful heritage of beauty which belongs to each one of us if we but claim it.

Prof. Washburn, entomologist of the station, spoke of the use of Bordeaux mixture and the experiments being carried on in spraying

at the station, referring also to other matters of practical interest to those present.

Being called upon for a few words, Capt. A. H. Reed, the veteran horticulturist of Glencoe, volunteered a song and coming forward rendered "Uncle Sam's Farm" in a way to bring down the house. Though along in years, he is very young in spirit and in determination.

Prof. S. B. Green spoke briefly of the work of the late legislature in providing for a forestry school at Itasca State Park and for a fruit breeding farm, to be operated in connection with the station.

The reader might be sure that if he was not present at this gathering he missed a lively time. Our president, Prof. S. B. Green, presided, and no one had a chance to become weary under the rapid shifting of this rather volatile but very satisfying program. The audience stayed till the close and went home happy, each one carrying an armful of flowers, a gorgeous procession as they passed out of the hall. The writer saw several of them later in the day as far out as the cross-town line on Lake Street. They were everywhere in the city and were scattered all over it. Where there was a person with an armful of flowers, we might be sure he came from the best summer meeting of the Minnesota State Horticultural Society.

AWARD OF PREMIUMS, SUMMER MEETING, 1907.

ROSES.

Varieties.	Exhibitor.	Premium.	Amount.
Yellow Harrison	S. R. Spates, Wayzata	Second	.25
Jenny Lind	D. F. Akin, Farmington	First	.50
Pink Rosa Rugosa	Alf. O. Hawkins, Excelsior	Second	.25
Agnes Emily Carmen	"	Second	.25
Rosea Linden	E. W. Wilcox, White Bear Lake	First	.50
Rosea Arkansaw	"	First	.50
Agnes Emily Carmen	"	First	.50
Salet	"	First	.50
Mdme. Plantier	Rose Hill Nursery, Mpls.	Second	.25
Gen. Jacq.	Jewell Nursery Co., Lake City	First	.50
Magna Charter	"	First	.50
Baron Van Stettin	"	First	.50
Madme. Plantier	"	First	.50
Glory of Mosses	"	First	.50
Anna de Diesbach	"	First	.50
Jubilee	"	First	.50
Genie Livaud	"	First	.50
John Hopper	"	Second	.25
Multiflora	"	First	.50
Francis Levete	"	First	.50
Jules Megaarden	Mrs. F. H. Gibbs, St. Anthony Park	First	.50
John Hopper	"	First	.50
Rosa Rugosa	Rose Hill Nursery	First	.50
Harrison's Yellow	D. W. C. Ruff	First	.50
Dawson	E. W. Wilcox, White Bear Lake	First	.50
White Rambler	A. O. Hawkins, Excelsior	First	.50
Prince Camille de Rohan	"	First	.50
Rugosa Alba	B. F. Hoyt, St. Paul	Second	.25
Rugosa Rubra	"	First	.50
Moss	"	First	.50

E. NAGEL, Judge.

PEONIES.

Article.	Exhibitor.	Premium.	Amount.
Lady Alice	Thos. Redpath, Wayzata	Second	$0.25
Sweet Scented Anemone	"	Second	.25
Duchess De Nemours	Rose Hill Nursery, Mpls.	Second	.25
Rubens	"	Second	.25
Edulis Alba	"	Second	.25
Miranda	"	Second	.25
Anemonae Flora Alba	"	Second	.25
Plenissima Rosea Superba	"	First	.50
Purpurea Superba	"	First	.50
Baron James deRothschild	"	Second	.25
Duke of Wellington	"	Second	.25
Louis Van Houttii	"	First	.50
Monsieur Durufle	"	Second	.25
Duc deCazes	"	First	.50
Mdme. Breon	"	First	.50
Delachi	"	First	.50
Victoria	"	Second	.25
Agida	"	Second	.25
L'Esperance	"	First	.50
Humei	"	Second	.25
Grandiflora Rubra	"	First	.50
Queen Victoria	"	Second	.25
Marie Lemonie	"	Second	.25
Floral Treasure	"	First	.50
Golden Harvest	"	First	.50
Bicolor	"	Second	.25
Fidelina	"	Second	.25
Maxima	"	First	.50
Jean d'Arc	Jewell Nursery Co., Lake City	Second	.25
J. Discaisne	"	Second	.25
Duc de Wellington	"	First	.50
Jerome	"	First	.50
Artemise	"	First	.50
Agida	D. W. C. Ruff, St. Paul	Second	.25
Compte de Paris	"	Second	.25
Gen. Gordon	"	Second	.25
Marshall Valliant	"	Second	.25
Festiva Alba	"	First	.50
Carnea Elegans	"	Second	.25
Alba Lutea	"	Second	.25
Gen. Curosegnore	J. P. Johnson, Excelsior	First	.50
L'Esperance	"	Second	.25
L'Esperance	Chas. Rixon, St. Louis Park	Second	.25
Vilmorin	Rose Hill Nursery, Mpls.	Second	.25
Rosea Elegans	"	Second	.25
Comte de Cussy	"	First	.50
Isabel Kerletzky	"	Second	.25
Grandiflora Alba	D. W. C. Ruff	Second	.25
Rosea Plenissima	"	Second	.25
Golden Harvest	"	Second	.25
Rubra Triumphans	G. W. Strand, Taylor's Falls	Second	.25
Festiva Maxima	B. F. Hoyt, St. Paul	Second	.25
Edulis Superba	"	Second	.25
Grandiflora Alba	"	Second	.25
Reine Victoria	"	Second	.25
Pottsii	"	Second	.25
Nigricano	G. W. Strand	First	.50

C. S. HARRISON, Judge.

PERENNIALS.

Angels Breath	S. R. Spates, Wayzata	Second	.25
Buttercups	"	Second	.25
Marguerites	Thos. Redpath, Wayzata	First	.50
Achillea Millefolium Roseum	E. W. Wilcox, White Bear Lake	First	.50
Aquilegias	Mrs. F. H. Gibbs, St Anthony Park	First	.50
Buttercups	"	First	.50
Delphineum	"	Second	.25
Forget-me-nots	"	Second	.25
Pyrethrum	"	First	.50
Poppies, Oriental	"	First	.50
Poppies, Iceland	"	First	.50
Sweet William	"	First	.50
Dielytra	Rose Hill Nursery, Mpls.	First	.50
Elegans Lily	"	First	.50
Clematis Erecta	"	First	.50
German Iris	"	Second	.25

Hemerocalis	D. W. C. Ruff, St. Paul	First	.50
Heuchera	"	Second	.25
Papaver, Oriental	"	Second	.25
Phlox, Sublata	D. W. C. Ruff, St. Paul	First	.50
Hardy Daisy	"	First	.50
Forget-me-nots	"	First	.50
Sweet William	"	Second	.25
Aquilegia Coerulea	Jewell Nursery Co.	Second	.25
Delphinium Kelnays	"	First	.50
Pentstemon Grandiflora	"	First	.50
Dianthus, His Majesty	"	First	.50
Clematis Erecta	"	Second	.25
Clematis Crispa	"	First	.50
Spirea Fillipendula	"	First	.50
Gaillardia Grandiflora	"	First	.50
Heuchera Sanguinea	"	First	.50
Pyrethrum Roseum	"	Second	.25
Coreopsis Lanceolata	"	First	.50
Papaver Nudicaule	"	Second	.25
Dicentra	S. R. Spates	Second	.25
Snowball	"	First	.50
Hardy Carnations	G. W. Strand	Second	.25
Hemerocalis	"	Second	.25
Iris	"	First	.50
Mock Orange	Mrs. S. R. Spates	First	.50
Philadelphus	D. W. C. Ruff	First	.50
Weigelia, Eva Rathke	E. W. Wilcox	First	.50
Gypsophila	"	First	.50
Summer Heliotrope	D. F. Akin	First	.50

E. NAGEL, Judge.

APPLES.

Varieties.	Exhibitor.	Premium.	Amount.
Malinda	Thos. Redpath, Wayzata	First	1.00
Keep 'Till June, a seedling	Mary A. Knowles, Excelsior	Second	1.00
Seedling	F. E. Ford, Glencoe	First	2.00

GEO. W. STRAND, Judge.

STRAWBERRIES.

Varieties.		Premium.	Amount.
Clyde	S. R. Spates, Wayzata	First	.75
Pineapple	"	First	.75
Uncle Jim	"	First	.75
Marie	"	First	.75
Bederwood	Thos. Redpath, Wayzata	Third	.25
South Dakota No. 1	"	Second	.50
Early Minn. Seedlings	Mary A. Knowles, Excelsior	First	3.00
South Dakota No. 1	A. Brackett, Excelsior	First	.75
Dunlap	"	Third	.25
Sample	"	Second	.50
Crescent	"	Second	.50
Lovett	Gust Johnson, Excelsior	First	.75
Crescent	H. G. Groat, Anoka	Third	.25
Bederwood	"	First	.75
E. H. Ekey	E. W. Wilcox, White Bear Lake	First	.75
Commonwealth	"	First	.75
Victor	"	First	.75
Splendid	Geo. W. Strand, Taylors Falls	Second	.50
Haverland	"	First	.75
Aug. Luther	"	First	.75
Bismarck	"	First	.75
Kitty Rice	"	First	.75
Lucas	"	First	.75
Warfield	"	First	.75
Crescent	"	First	.75
Lovett	"	Second	.50
Excelsior	"	First	.75
Marie	"	Second	.50
Corsican	"	First	.75
Kansas	"	First	.75
Springdale Beauty	"	First	.75
Sample	J. P. Johanson, Excelsior	First	.75
Sunshine	"	First	.75
Senator Dunlap	Jewell Nursery Co.	First	.75
Nellis	"	First	.75
Bederwood	"	Second	.50
Collection	G. W. Strand	First	5.00
Sen. Dunlap	Miss Mary Moeser	Second	.50
Arnout	A. Brackett	First	.75

J. P. ANDREWS, Judge.

CURRANTS.

Varieties.	Exhibitor.	Premium.	Amount.
Fay's Prolific	S. R. Spates, Wayzata	First	.50
Stewart's	"	Second	.25
Empress White	"	First	.50
Emperor Red	"	First	.50
Comet	"	First	.50
Pomona	"	First	.50
London Market	"	Second	.25
Ivory White	"	First	.50
White Transparent	"	First	.50
Improved Red Dutch	"	First	.50
Black Naples	"	First	.50
Victoria	Thos. Redpath, Wayzata	Second	.25
Red Dutch	"	Second	.25
Seedling Currant	"	First	1.00
Prince Albert	Alf. O. Hawkins, Excelsior	First	.50
Pomona	"	Second	.25
London Market	"	First	.50
Red Cross	"	Second	.25
Wilder	"	First	.50
Victoria	"	First	.50
Long Bunch Holland	"	First	.50
White Dutch	"	First	.50
White Grape	"	Second	.25
Red Dutch	"	First	.50
Versailles	"	First	.50
Stewart's	"	First	.50
Fay's Prolific	"	Second	.25
Red Cross	Gust. Johnson, Excelsior	First	.50
Long Bunch Holland	"	Second	.25
Versailles	"	Second	.25
White Grape	Mrs. D. W. C. Ruff	First	.50
Wilder	S. R. Spates	Second	.25
Perfection	B. F. Hoyt	First	.50
Lee's Prolific	"	First	.50

A. BRACKETT, Judge.

GOOSEBERRIES.

Varieties.	Exhibitor.	Premium.	Amount.
Pearl	S. R. Spates, Wayzata	Second	.25
Carrie	"	Second	.25
Red Jacket	"	First	.50
Minn. Thornless	"	First	.50
Carrie	Thos. Redpath, Wayzata	First	.50
Minn. Thornless	"	Second	.25
Pearl	Alf. O. Hawkins, Excelsior	First	.50
Houghton	"	First	.50
Chatauqua	"	First	.50
Smith's Improved	Gust. Johnson, Excelsior	First	.50

A. BRACKETT, Judge.

Secretary's Corner.

Membership, July 8th.—Annual membership at the above date is 2213. Adding to this the life roll of 189 makes a total membership of 2402. Would you like to contribute one new member to assist in bringing the roll this year up to 2500? One new name was added to the life membership roll on the day of our summer meeting, July 2, that of Dr. Flora M. Davey, of Minneapolis.

Competitors for the $100 Loring Plum Prize.—There have been so far only two entries for this prize. There should be more this season, and we hope that some one may have the seedling plum which will secure the $100. Conditions governing the award of this prize may be found on page 280 of the report of this society for 1905. Entries for this premium should be made to the secretary, and directions will be sent by him as to sending fruit for testing, etc.

Competitors for the $100 Prizes.—There have been so far altogether 259 entries made in competition for the $100 prizes offered by the society for seedling apples. About eighty of these have been made this year. There are probably others who have apple trees growing from seed planted this spring who have overlooked making the necessary entries. According to the conditions under which the prize is offered, they may be made at any time within one year. Please give this matter early attention.

An Increased Interest in Seedling Fruits.—A letter was sent recently to all the vice-presidents of the society asking their special assistance in securing information in regard to new or desirable seedlings that may be in bearing this year. The cooperation of all the members of the society in this important work is earnestly desired, as it is very important that we should know as to the existence of all such seedling fruits. Information in this direction may be given to the vice-presidents of the respective districts, whose names and addresses if not known can be found on the front cover of each one of our monthlies, or it may be sent direct to this office. There ought to be some new seedlings of value each year coming into bearing in our state, and doubtless there are plenty in bearing that we know very little about. Look sharp and help along the good work the society is doing!

Exhibit of Fruit at the State Fair.—Do not forget that there is offered at the state fair approximately $1,000 as premiums in connection with the fruit display there—a little more we believe than has ever been offered before, and divided up in such a way, with the pro rata premiums, that every exhibitor of good fruit is quite certain to receive a share of the award. It is our ambition to make this *the best fruit exhibit* ever made at the state fair, and will you not bear a hand to help accomplish this result? If an old exhibitor, you will readily note the changes in the list and be interested in them, and as usual bring everything that you can show. That is the way to make it pay the exhibitor. If you have never exhibited before, don't hesitate to try. Your chance is as good as any one else's, and you will be surprised to note the amount of premiums you will carry away for the amount of fruit shown. Please correspond with the secretary, who has charge of this department at the fair, and any suggestions along this line will be thankfully received and questions answered as far as possible.

A Vacancy Filled in the Executive Board.—At the semi-annual meeting of the executive board of this society, held in the secretary's office on the evening of July 1st last, Thos. E. Cashman, of Owatonna, was by a unanimous vote of the board chosen to fill the vacancy on the board caused by the death of Mr. Frank Yahnke. This appointment will hold good until the next annual meeting of the society in December next.

$100 in Prizes for the Children's Contest.—An industrial contest for Minnesota boys and girls is being carried on this year in the "Farmers' Club," an organization composed of those who have attended the Minnesota Farm School. This contest is being worked up with the assistance of the county superintendents of the state, who are seeking to interest as many boys and girls in their respective districts as they can to participate in the contest. The prizes offered aggregate $1,400, and are divided into some four hundred cash prizes, which cover not only the products of the soil, corn and other grains, vegetables and fruit, but also includes lines which belong to especially to the girls, in cooking and sewing. The executive board of the horticultural society look upon this as a good means of interesting the young in horticulture and have appropriated $100 to be suitably divided as premiums upon exhibits of fruit, a condition being that the fruit shown must have been grown on the home farm of the contestant and selected by him for this contest. The premium list for this contest has not yet been received. When it is, it is the purpose to publish the portion of it in which our readers have a special interest. Any inquiries for premium list or information as to this contest may be addressed to the "Farmers' Clnb," St. Anthony Park, Minn

Selection of Land for Fruit Breeding Farm.—After examination of a number of tracts offered for this purpose, the executive board of this society selected and recommended to the regents a tract of land lying almost immdiately adjoining Zumbra station on the Minneapolis and St. Louis Road. The tract comprises the farm of Daniel Fink, eighty-five acres, also a piece of twenty acres and another of ten acres contiguous to this farm. Six members of the executive board were able, at different times, to personally inspect the tract, and they agree unanimously that it is especially well adapted to the purpose for which it is to be used. It is located in what is called "big woods" region, soil growing naturally hard maple and basswood, though this farm has been under cultivation long enough so that the fields are entirely free from stumps and roots. The land has been well cared for and its fertility kept up. The location is a very high one, approximating one hundred feet above the level of Lake Minnetonka, from which it is distant, however, perhaps a mile, though there are one or two small lakes lying between it and Lake Minnetonka. Notwithstanding the elevation of this tract and the generally rough character of the region in which it lies, it is a comparatively level one, not sloping any more than is necessary for good drainage. This fact, with the splendid air drainage provided by the low ground around it, the peculiar character of its soil, etc., make it especially well adapted for orchard experimentation as well as other fruit breeding purposes. There is a good eight room house on the premises, facing west on the road from Zumbra station, from which it is only a few rods distant. Besides this road there is also one coming through the tract from the east, and when the additional land referred to is purchased a part of the farm will also lie on the west side of the road first referred to. There is excellent communication between here and Minneapolis either over the St. Louis road or by electric line and boat via Lake Minnetonka. The board of regents have purchased the eighty-five acre tract referred to, the remaining land to be bought later, it is understood.

SOME OF THE DINERS AT 1907 PICNIC OF THE MINNESOTA STATE HORTICULTURAL SOCIETY, IN ARMORY HALL, STATE EXPERIMENT STATION.

THE MINNESOTA HORTICULTURIST.

VOL. 35. SEPTEMBER, 1907. No. 9.

CAN WE BREED HARDINESS INTO TREES AND PLANTS?

CHAS. G. PATTEN, CHARLES CITY, IOWA.

Prof. L. H. Bailey put, in a terse sentence, a thought that had been in the minds of botanists and plant breeders everywhere, to-wit: that "plants are infinitely variable;" a companion sentence from Luther Burbank is, "the power to improve our useful and ornamental plants is unlimited." These two quotations will serve to introduce this brief and imperfect paper.

If plants are infinitely variable they will vary in the direction of the most important demands of their environment, whether of cold or heat, of dryness or humidity, or toward any combination of these conditions.

No one, I think, will question the fact that fleetness and endurance has been bred into the horse, and endurance is but another name for hardiness in plants, and the strongest force in variation appears to me to be in the direction of the plant to maintain life under every condition.

The best example of the fact of variation and adaptation that occurs to my mind is to be found in catalpa speciosa, the native habitat of which is mostly between latitudes 32½ and 37½, in the lower part of Indiana, Illinois, in Missouri, Tennessee and Mississippi, and in much smaller numbers on the west side of the Mississippi river in Arkansas—though I believe originally abundant in Louisiana.

It will be noticed that its home was in the lower valley of the Mississippi, and along it and its tributaries, near their junction with the great river, in a mild climate and with abundant moisture.

Today this tree is at home three to four hundred miles north of where nature had established its home, and in fifty years hence by careful selection will doubtless be adapted to nearly five hundred miles north of its original home, proving most conclusively that through selection hardiness, or adaptation of trees to a colder climate, can be secured—and this has been accomplished for the most part with an almost unconscious effort.

Of the first seedlings grown by me thirty years ago, a few only would endure the winters, but by selecting seed of the first and second generation nearly fifty per cent of the seedlings are as hardy as three to five per cent of the first seedlings grown.

To say that you can not breed hardiness is to deny the well-known laws of heredity. It is like saying that the white-faced markings and horns of the Hereford cattle do not exist, and that fleetness and endurance have not been bred into the horse.

Repka Malenka and Collins cross, four year old trees. Notice the remarkable size of these four year old trees from the little mother Malenka, six trees out of nine being fully three times as large as the mother tree at that age. Mr. Patten is standing between the sixth and seventh trees.

How happens it that the Turner raspberry is so much more hardy than the varieties that have preceded it if we can not obtain increased hardiness by selection?

Does any well-informed horticulturists believe that if he grew a thousand uncrossed seedlings from the Oldenburg that there would not be a great variation in them in point of hardiness? Or that the general average of hardiness, and even individual hardiness, would not be increased if seeds were planted from the most perfect specimens, in every particular growth, of leaf, of maturity, of freedom from rust and blight, and every other imperfection?

As I view it, we have had too much De Candole pessimism spread over our horticultural and breeders' conventions of recent years. What the purpose is I am unable to understand.

We are not dealing, except in a limited way, with native trees or fruits; if we were then selection as a first step toward progress must play a very important part. We are dealing mostly with cultivated, civilized plants, and if we cross-fertilize with the highest skill and with our very best combinations, even then critical and rigid selection must be had, or we shall fail in our purpose to advance.

Does any one believe that because the wild crab apple, or our native butternut and walnut, does not extend farther to the west

Four year old trees—winter of 1905. Notice the remarkable difference in size, one tree in the ten fully twice the size of any of the others. The same thing has occurred in other crosses where there were only three to five trees.

and northwest on our prairies, that specimens cannot be found in our groves that are sufficiently hardy to permit of their successful culture a hundred miles or more beyond their present limits? In your discussions last winter, Mr. Underwood very pertinently asked, what is hardiness? and then proceeded to answer it correctly, as it appears to me, by saying, in substance, that they were hardy because they were adapted to the conditions in which they are. Plants are hardy, as he says, in South America, because they are adapted to the climate and soil conditions of South America. Plants are

adapted to desert conditions equally with other plants that grow in the most humid climate; so that I cannot quite agree with him that it is lack of moisture. Rather, I think, hardiness is better defined by saying that a plant is hardy when it has a constitution that adapts it to the climate and soil conditions where it is growing. Numerous plants grow amid desert sands and torrid heat, others of the same or nearly allied species are at home far north in semi-arid regions, and other plants must be supplied with abundant moisture, or they cannot live.

So then, it is the business of the horticulturist to breed plants and trees that have a constitution that adapts them to the climate in which they are to grow, and the average plant breeder had better confine himself pretty closely to the well-known laws of heredity, by the selection and combination of characteristics of plants that have the greatest hardiness, or adaptation to both summer and winter conditions.

Our parent trees must have vigor, a normal period of shedding their leaves, neither too early nor too late; the most perfect foliage that we can select; perfection in beauty and quality of fruit, clinging to the trees until its quality is well developed. Neither parent tree must be overloaded—if so the vigor and quality of its germ cells will be lowered, and we cannot advance.

In the meantime, Mendel's law of dominant and recessive characters will be studied at our scientific experiment stations, and perhaps a sufficient number of exceptions to the general application of his law will be explained or eliminated so that the average experimentor can understand them. And by and by we shall become acquainted with Prof. De Vries theory of "mutations" and "saltations," or breaks in continuous action of the heredity forces of "protoplast and cells, which are the true bearers of heredity characters," so that we shall be able to determine how a Concord grape leaped into being out of the line of its heredity; and then we shall know, also, how a Morgan horse came to be. And when we have learned all of this, we shall be wiser plant and animal breeders than we are at this writing.

Mr. Geo. J. Kellogg (Wis.): I would like to ask Mr. Patten what he has discovered in the way of crossing apples, and I would like to ask him, since he has had a good deal of experience, if he has discovered anything more hardy than we have at present.

Mr. Patten: Not in the crosses I have made, and I should have to study this subject over considerably before I could determine in my own mind to say that. I should say that the cross, for instance, of the Duchess of Oldenburg with a Fall Pippin would certainly indicate to me a very great advance in the fruit, the tree being

apparently equal in hardiness or nearly so to the Duchess, while the apple is entirely separate as an eating apple. Among my seedlings I believe I have an uncrossed seedling of the Perry Russet which is decidedly hardier than the Perry Russet. I have no question in my mind but that it is an uncrossed seedling of the Perry Russet. I have also a seedling of the Fameuse that is from fifty to seventy per cent more hardy than the Fameuse itself. There is no question about the improvement in hardiness, but in all of our crosses we could not expect it. When we undertake to cross our fruits, we do not know what we are doing. We have just begun, and we cannot expect to make a very great advance perhaps in the first one or two changes.

There is one thought I wish to speak of that was brought up by Mr. Wedge in his report, and also in the paper by Mr. Boss, and that is in reference to selection of seeds that are planted. Now, we have almost unlimited opportunities to select seed. We can select them until we are made almost crazy, and we do not know what the seedlings will produce, but, as I take it, we have come to the point where we want a little more scientific work done in that line. We have simply been gathering seed and planting them, and I think the thought should be very strongly impressed on our minds that we should know just as far as possible the history of the tree from which the seed is taken. Everything should be known with reference to the plants and trees that we grow, and when we look out for that we shall make better progress than we have made. I think this is a question that needs a great deal of emphasis and a great deal of study.

The President: Do you think, Mr. Patten, with your experience in the past years, that this feature of an auxiliary plant breeders' association can be made of service in bringing about more intelligent conditions?

Mr. Patten: I certainly do, and I do not know how it could be otherwise. When you devote a session like this to a special line of work and call out the best thought you have in your association and in the plant breeder's work at the station, I do not see why you should not advance very rapidly beyond anything we have already done. I think it is a great step that you have taken here for the advancement of horticulture in this northwestern country. (Applause.)

EDUCATING THE NURSERY AGENT.

W. S. HIGBIE, EDEN PRAIRIE.

That specimen of the genus homo called a nursery agent, sometimes styled a slippery-tongued scoundrel, undoubtedly sells at least 90 per cent of the nursery stock that is planted in the Northwest. Incidentally he is one of the greatest agencies for the dissemination of horticultural information,—or misinformation, as the case may be —that exists. This society boasts of a membership of about two thousand persons, and it is trying bravely to educate the masses of the state along horticultural lines; but for every person that it reaches through its literature there are many others who come in contact with, and listen to, the man who sells the nursery stock. To him is usually given the credit—or blame—of the success or failure of the stock planted. If these statements are true—and I believe that nearly every one in this audience will agree with me that they are—is it not important that men who are sent out to solicit orders should be men of good character and have some special training for the work?

That the above-mentioned epithet applies to some nursery agents the writer of this will not attempt to deny, but, on the other hand, he will not concede that the majority are of this stamp or that the blame for dishonest selling wholly rests with the agent. A certain class of buyers demand that they be humbugged, and there is always some one ready to meet any demand of the public, or portion of the public, whatever it may be. For an example: Let two agents start out in the same territory. One offers good, honest stock at a reasonable price, his descriptions are truthful, his representations fair, but he has to leave many places without making any sales or, at least, very small ones. Now let the other fellow come along with his overdrawn pictures, his mammoth samples of fruit and exaggerated statements. Ten chances to one, he reaps a rich harvest. But fortunately for the man who wishes to do a straightforward business, there is a class of buyers that know enough to place their orders where they will get good treatment. Does it not behove nurserymen to see that these get honest goods and correct information?

Now let us see if we get a correct view of the situation: Nurserymen are not in the business for their health, neither are many of them in it from a philanthropic motive. Orders must be gotten, and in their eagerness to obtain all the business possible they hire some men not at all fitted for the work and allow them to get orders by none too truthful representations, thinking to redeem the good name of the firm by delivering good stock.

And now comes the question, what qualities should a man possess in order to be a first-class solicitor? He should by nature be affable and pleasant, a man of great energy, perseverance, tact and good judgment. By education and training, he should be a veritable encyclopedia of horticultural knowledge, for after he has made a sale of nursery stock he will be asked numerous questions relative to the best location, manner of planting and after care of the proposed fruit plantation or landscape garden. Where can a person get this training? To a young man who contemplates making a business of selling nursery stock, the writer knows of no better advice than first to take a course at some agricultural school, selecting the study of horticulture as a specialty, supplement the knowledge obtained there by actual practice in a nursery, and, finally, in the real work of soliciting orders he may, by observing the behavior of different varieties of trees and plants under different environments, acquire a large fund of useful information that will enable him successfully to compete with the unscrupulous tree-peddler and thus become a public benefactor in helping to spread the gospel of horticulture.

Mr. A. J. Philips (Wis.): Would you put an advertisement in the paper for a man to sell trees and say that no experience was necessary?

Mr. Higbie: I never have, and I hardly think I should.

Mr. Husser: I think Mr. Higbie would have to have a new set of agents to come up to his ideals.

Mr. Higbie: I think in dealing with most of these subjects we have to deal usually with the ideal. We want something to look up to; we must have a certain standard of business, and that standard should be a high ideal. Now, perhaps my ideal is pretty high for any man to attempt to reach, but I believe it will be possible in time.

Mr. Geo. J. Kellogg (Wis..): An agent came along where I had been furnishing some trees last spring and told the man those trees were nothing but seedlings. Some of the trees could not be grafted for less than twenty-five cents apiece. This nurseryman here has told you that a good hand will graft two thousand trees a day. That is one of the stories they put up. The "whole root system" and the "budded trees" are going the rounds again.

Mr. A. C. Austin: Last summer I was in North Dakota, and I had my eyes opened to many things in relation to what was the first qualification of an agent, and I say character and the Golden Rule. I have seen them going about up there and advocating things that are no more fit for North Dakota than is the rich man of whom the Master spoke to enter Heaven. (Laughter.) I have seen them go to these people and hypnotize them, as it were, into buying a whole lot of stuff, as the Professor said, where a little bit would have been sufficient, instead of over-stocking them with something that they did not have time to take care of and that would in any event

mean total failure. They have gone into homes where the people have scarcely enough to clothe and feed themselves, and they have hypnotized them like a swarm of bees flying in military order, when the people did not even know how to take care of the things they bought, and we all know that trees and shrubs are not going to do well unless they have the best care given them. But they have gone to work and deliberately advocated the planting of these things, and the people bought them. I saw seven or eight hundred trees delivered, I saw farmers driving out to their homes miles in the country carrying these trees with the roots exposed to the wind and the air. They were planted, of course, but in a short time people would wonder why these things did not grow. There are a great many things to be taken into consideration in connection with this business, but if the agent has character and will do as he would want to be done by, will properly represent his goods to the people and tell them how to take care of them, then we shall have reached the ideal. (Applause.)

Mr. O. J. Flagstad: I want to ask a question in this connection. Is it not many times true that even the agent is misled? I do not stick up for all kinds of agents—I know there are two kinds—but I think in some instances even the agent himself is misled. I know of one case where an agent came to sell stock in a certain locality from a nursery which was claimed to have thousands of its own trees, but which existed more on paper than in reality. The agent thought he was acting in good faith and sold the stock to the farmers as stock grown in the climate where it was to be planted.

Of all the crops hastened by the use of hotbeds, perhaps onions show the best results both as to early maturity of the crop and the increased yield. Onion seed sown in the flats or in soil over the manure in early March will produce plants large enough to set out the first or second week in April. The young plants should not be allowed to grow tall and spindling, but should be sheared or cut back, taking about 1 inch of the tops off.

If the season for planting out is late, this cutting-back may be practiced more than once; and at the time of planting into the ground, the plants should be cut back so that the tops will remain upright. In setting out, do not set the bulb deep, only enough to hold the plant upright. Set the plants from 3 to 4 inches apart in the rows, having the rows, if in a kitchen garden, 12 inches apart; if in a field crop, 18 inches between the rows. If the soil is in a good moist condition at the time of setting the plants will take hold at once of the soil and grow with great rapidity.

After the hotbed has served the purpose of growing plants for the garden, it may be used to grow plants of late cabbage or for the main crop of celery. One other use to which it may be put is to plant cucumber or melon seeds directly in the frames where they may be protected. They will outgrow the frames before the season is over; but as the hotbeds are usually in some out-of-way corner, the vines will not be unsightly and the yield is usually enormous.

GROWING GARDEN CROPS FOR THE CANNING FACTORIES.

JOHN S. HUGHES, MINNEAPOLIS, SEC'Y MINN. CANNERS' ASS'N.

In assigning me this subject I do not suppose for one moment that your secretary looked upon me as competent to teach the men and women I see before me anything new in growing garden vegetables, but rather that I might indicate in a cursory manner the varieties usually grown for canning purposes and in what respect their cultivation for such purposes differs from the accepted methods of growing these crops for home use. This must be then my excuse for standing here this morning.

In these days every vegetable known to our gardens excepting egg plant, and a few others of the like nature, is packed in cans. Peas, beans of every kind, corn and tomatoes are familiar to us all, but many have never seen canned spinach, rhubarb, sauer kraut, cabbage, beets, pumpkins and squash nor know that all of these things are today packed in large quantity, besides many others not in common use. But the factories which pack more than one or two articles in this list are rare. Tomatoes lead, corn comes next, and peas follow some distance behind. These are the three great staples. Each requires different methods of handling, a different process and in the main different kinds of machinery for their preparation for the can. The filler which will put corn—a creamy pulp—into the can will not do the same for peas, which require to be shaken in. The same is true of tomatoes, string beans, etc. String beans and peas, corn and tomatoes have the same seasons of maturity and thus get in each other's way. For these reasons they require separate lines of machinery and two gangs of workers, and, hence, might just as well be packed in separate factories.

Here in Minnesota we pack, as you know, principally corn. Why? The answer is easy, almost obvious. We can grow corn to a better advantage than any other vegetable. I might say truthfully we can grow sweet corn to perfection. Away up here, close to the early frost line, corn gathers both quality and sweetness. Why, I do not know. Whether the cause be soil or climate, none seem to be able to say, but it looks as if the climate had much to do with it. As many of you know, Maine has long been pre-eminent for highest quality in canned corn, and its claims to such pre-eminence are just. But we are fast treading on her heels. No other corn-packing state approaches Maine in quality so nearly as Minnesota. Others get more money for their product than do the packers of Minnesota, but the reasons are other than those of quality. Strange as it may

seem, Minnesota corn stands better and brings a better price away from home than at home.

The varieties of corn most favored in this state are Early Crosby and Evergreen. The former is the variety used in Maine and has been adopted here because it is ready for the can about the middle of August, thus giving the factory an early start and a long season. The Evergreen does not mature until September first. The Crosby is a fine, white, delicate-flavored, true sweet corn, but does not show up so well in the ear, owing to its big, broad grains. The ear is small, and it is not a very heavy cropper, yielding about two or three tons per acre in the husk. On very rich bottoms, however, the ear lengthens, and the yield sometimes reaches four tons per acre in the husk. Canning factories pay $5.50 per ton for this variety and, estimating the value of sweet corn fodder, which is preferred to any other for cows, the return per acre is usually very satisfactory to the farmer. The proof of this is that factories have no trouble getting all the acreage they want. The Evergreen has a much larger ear, sometimes too large to go through our cutters. The evergreen seems to grow larger ears in this state than in the corn-growing section of the south. Why this should be so I do not understand. If often yields five tons per acre, and I have known of some exceeding six tons. No wonder then the farmers like it. Factories are compelled to require growers to furnish part Crosby, or they would grow all Evergreen.

A variety now coming into use here is the Country Gentleman. It is the finest of all varieties for canning and brings the canner from two and a half to five cents per dozen more than the others. But it is very late and rubs the frost line too close to become popular. Neither does it yield so well as the Evergreen. The canner pays for it $7.00 per ton, and it is worth the cost. The ear is small, but the cob is relatively smaller. The grain is spike-like and irregularly placed on the cob. For this reason it is sometimes called Shoe Peg, by which name it is known in Maryland, where it originated and is generally used.

Old Colony and Hickoks are varieties similar to the Evergreen, not quite so prolific but usually preferred as to quality. They, however, are not well known and are therefore not widely used. They are between the Crosby and the Evergreen as to maturity. Some canners have used the Peep o' Day to get an early start, but while its quality is good its slow habit of growth and small ear make it undesirable to the grower. This completes the canner's list of varieties suitable to this vicinity.

As every farmer knows, sweet corn is planted and cultivated similarly to field corn, but being delicate and tender it does not sprout as quickly and vigorously as field corn unless the soil and season be warm. It is very prone to rot if the ground is cold and wet after planting. But once it does get its head out of the ground, it is quite as tenacious of life as its plebeian brother. In this connection, a word about planting. Don't plant your sweet corn over two inches deep and don't be discouraged if it doesn't come up within two weeks. Be sure by careful examination that it has decayed before replanting, or you may have more fodder than corn.

Theoretically tomatoes are a much more attractive proposition to the canner than corn, but practically they have proven anything but profitable in this section. The average man with a small garden will tell you of the loads of tomatoes which go to waste on his plot, and he cannot understand why the canners of this state hesitate to pack them. It is one thing to get a good yield from a dozen tomato vines and quite another to make an acre pay. No good heavy-bearing variety has yet been discovered which will ripen its fruit early enough to give long enough season to make it pay at such prices as the canner can afford. This coupled with the fact that tomatoes have the same season as corn, require a different sized can and different machinery, makes the corn canner hesitates to turn from the thing he knows he can grow to that which he is not certain of. The speaker has had on his own place in Maryland thirty acres in a single field, but such a thing would be impossible here. In Maryland the plants are started in cold frames or open beds. Here the seed must be sowed in hotbeds and transplated at least once, sometimes twice. Every transplanting, while increasing the stockiness and hardiness of the plant, checks its maturity. This means late ripening.

The variety best adapted for canning is the Stone, but its great drawback for this section is that it does not begin to ripen until around September first. As the average date of killing frost in this section is September 20th, the Stone cannot ripen one-half of its fruit in that time. The task then is to find a variety which will begin to ripen by August 15th. The speaker has hitherto refused to attempt to pack tomatoes in this state owing to the lack of such a variety. But this year he thought he had found the much-desired in Spart's Early Anna. All descriptions of it were attractive, so he planted at Clearwater, Minnesota, about fifteen acres of as fine a lot of hotbed plants as he has ever seen. The promise of the vines was splendid, and the blossoming and set of the fruit satisfactory—but the result was the same old disappointment. Fruit began to come into the factory on time—about the 20th of August, but at the

end of a little more than two weeks it was all over, the vines were done—less than 100 bushels per acre where with the Stone, in a good season and good land, the yield should have been from 300 to 500 bushels per acre. We paid thirty cents per bushel—which meant only $30.00 per acre where it should have been $100.00. Tomatoes in Minnesota remain still a problem to be solved.

I have time to cover hurriedly but one more canners' crop, and that will be peas. Of all canning factory crops for the Minnesota farmers, I believe peas will be the best. Peas were packed in Minnesota this year for the first time. It is the principal pack in Wisconsin, where more peas are grown and packed than in all the rest of the country. While this crop was not wholly satisfactory in Minnesota last season, neither was it in Wisconsin. Peas are a peculiar farming proposition. They are seeded with a drill like grain, about three and a half bushels being used per acre. Two months ago seed peas were worth about $2.25 per bushel. Today they cost from $3.50 to $5.00. The seed for an acre costs about $12.00—something different from corn at forty cents. After seeding they are usually dragged but never touched again until harvest time—not cultivated in any way. When the oldest pods are ready—and this must be determined by experienced men—the vines are cut by a mower and hauled on hay wagons to the factory, where they are run through a viner (or patent thresher) and the results of each load of threshed green peas weighed. The farmer is given a weigh-check good for the number of pounds stated thereon at $1.50 per hundred pounds. An acre of good land in fair season should yield 2,000 pounds, or about $30.00. This may not seem much, but when it is considered that no more work is required to produce this crop than for grain without the harvesting and threshing expense, it will be seen that peas are a good crop for the growers, netting, as they do, from $15.00 to $25.00 per acre.

While there are varieties of peas almost innumerable, the canner regards but few as especially desirable for his purposes. The Alaska is the sole available early sort, and Horsford's Market Garden and McLean's Advancer are late sorts. The Alaskas are a very prolific variety, a sound, smooth, blue pea of fair quality. The late varieties are known as sweets and are wrinkled when fully developed. The Telephone is a very fine variety for canning, but it is so unreliable in yield that very few canners attempt to pack it. The old-time Marrowfats have been wholly abandoned by packers. The Alaskas are sown as early as possible and begin to come into the factory about June 20th. The Sweets are sown later and mature in July. The season lasts about six weeks.

I would like to describe the various canning operations affecting the articles I have named, but I must remember that my subject is "Growing Garden Crops for the Canning Factory," and also that my time is more than up.

Mr. Elliot: In transplanting tomatoes he says those transplanted did not ripen as early as those that were not transplanted.

The President: Well, the more times they are transplanted, the stockier they grow.

Mr. Frank Gibbs: I transplanted my tomatoes, and I got earlier fruit. I find transplanting a benefit.

The President: That is my view.

Mr. A. J. Philips (Wis): In regard to peas. In Monroe County, Wis., and in the northern counties, on cut over lands, is an excellent place for peas. They grow the best peas I have ever seen, and they have several factories there and are very well satisfied with growing peas. They are using the pea straw profitably now.

The President: This experience with tomatoes this year was at Clearwater. That is pretty far north.

Mr. Kellogg: He spoke of the price of seed peas being $7.00 per acre. Is not that pretty high?

Mr. Caton: For the last two years they have paid as high as $12.00 per acre.

The President: I believe they usually plant six quarts of seed corn to the acre. Are there any further questions in regard to this paper? This is quite a large industry, and this paper is of a good deal of interest to farmers and growers. In some sections this industry has been successfully managed and in some sections it has been anything but a success.

Mr. W. L. Parker: I would like to ask whether there is any remedy for tomato rot?

Prof. R. A. Emerson, (Neb.): I have had some trouble with rot in tomatoes, but I know very little about this rot. In some experiments we have carried on in the mulching of vegetables, we found that tomatoes came through with a small percentage of rot, while with cultivation the fruit would sometimes be dirty and the rot was pronounced. I think the same thing was spoken of in a paper here yesterday.

Mr. E. G. E. Reel: I would like to know whether in speaking of this rot it refers to the tomato itself, or to the blighting of the vine.

The President: It means the rotting of the fruit.

Mr. Husser: We have very good success keeping tomatoes from rotting by putting brush or straw under the vines.

Mr. Kellogg: Oh, they rot on the trellis.

The President: Yes, we have them rot in the greenhouse on the trellis. I have not had success with Bordeaux mixture.

Mr. Andrews is a successful canner and is a large stockholder in one of the canneries at Faribault. He is so modest that he would not give us any information unless we called on him. We would like to hear from Mr. Andrews.

Mr. J. P. Andrews: Sometimes there have been some things that did not pay, but so far as corn is concerned they have no variety that is doing better than the Portland for early and the Old Colony and Evergreen for late, and that is what they plant mostly. In some seasons it has been a profitable business and in others not so. On the whole it has been a good thing. If there are any questions to ask, I can answer them better than I can give a detailed statement of our operations, but so far we have tried nothing but corn.

Mr. Seth Kenney: I would like to ask Mr. Andrews whether they have special men who grow that corn, or whether they take the corn from anybody that brings in a load.

Mr. Andrews: They generally contract in the spring with some farmers—anybody can get a contract.

Mr. Kenney: But outside of the farmers who have been given contracts, can any one bring his corn in?

Mr. Andrews: They can if the factory can take care of it, but if there is an extra large crop of corn they cannot take care of anything outside of their contracts, and a farmer with a load of corn would stand no show.

The President: Are the cobs of any value?

Mr. Andrews: They have not sold the cobs, but they are carted out into a yard into which the hogs are turned to fatten. The man who has the hogs takes care of the cobs, so it is of no expense to the factory. That is an even thing. The husks make a good thing to fill a silo with.

The President: Do the farmers get them back?

Mr. Andrews: No, there is not enough of each farmer's product to make it worth while to put into their silos. The husks have been fed to cows, and they seem to like the husks better than the cobs, although there is a little corn left on the cobs. The cutters take the corn off above the husk and the corn that grows on that part of the cob is left on the cob, so there is a good deal of corn in this feed and refuse from the factory. It just simply takes care of itself.

Mr. Husser: What is the sweetest corn?

Mr. Andrews: The earliest is the sweetest. The Country Gentleman is considered the best of all. Lately they have used the Evergreen. They have almost discarded the Country Gentleman, although, as this paper suggested, they might, I think, better pay a little extra price for it. The factory gets its corn grown for $4.50 a ton.

Mr. Elliott: In the husk?

Mr. Andrews: Yes, in the husk. We have always figured upon paying $5, but they can get all the corn they want for $4.50.

Mr. Benjamin: Do they snap it off or husk it?

Mr. Andrews: They take it off with the husk, and if there is a stem a foot long it goes. If it is snapped off close there will be only a little husk on it and the corn becomes bruised in handling, so they want a long stem with the husk.

Mr. Benjamin: I noticed on the way here a canning factory, and usually they have cattle in the pasture, and all the refuse is fed to them.

RECIPES FOR CANNING PLUMS.

(Furnished by those who took premiums on canned plums at the last annual meeting of the society.)

With Sugar. The proportions are one pound of sugar to one and three-quarter pounds of plums. Make a syrup of sugar by adding one cup of water to every pound of sugar; let it boil and then skim it. Place the plums in a preserving kettle and cover with boiling water until they float; then cover the kettle and let it boil gently. As soon as the skins begin to crack all over (which all plums fit for canning will do), pour off all the water, cover with the syrup and let boil for a few moments until thoroughly cooked; then put in cans and seal up. I find 'tis best to do but one can at a time, also that taste must be consulted as to sweetness. With Surprise plum, which is quite acid when cooked, I use a little more sugar than the above calls for.

Without Sugar. Cover the plums with boiling water and let them cook until the skins begin to crack; then dip them into jars with the water in which they have been scalded, fill jars full and then seal. When opened in winter, dip them from the juice in which they are canned and cook them for a little while in a rich syrup. They are then fine for sauce or pies.—Mrs. C. W. Merrill, Winona.

With Sugar, Surprise plum. Use two-thirds cup of sugar and one-half cup of water. When it is boiling, put in enough plums to make a pint of fruit. Cook slowly for fifteen minutes and seal when hot.—Mrs. A. Brackett, Excelsior.

With Sugar. Prepare a syrup of equal parts of honey, sugar and water. Boil up well, skim and set aside. Drop the plums in boiling water, to which add a little soda if skins are tough, let come to a boil and when skins commence to crack skim out in the prepared syrup, set back on the range and cook very slowly until done. Fill hot in cans and seal.—Miss Mary Moeser, St. Louis Park.

With Sugar. Place the plums to be peeled in a dish, pour over them boiling water and let stand about one minute. Drain off the water and cover with cold water. Then peel and put in the can with about two tablespoonfuls of sugar. Place the can in water, gradually bring to a boil and cook about 20 minutes; remove from kettle, fill with boiling water and seal at once.

P. S. Remember always to place something in the bottom of the kettle for the can to rest on, so it will not break; two or three thickness of cloth is all right.

Without Sugar. Place the can, already filled with plums, into a kettle containing about two quarts of water, and also place two or three thickness of cloth in bottom of kettle so the can will not break. Gradually bring the water to a boil. If you wish to preserve the shape of the plum cook ten or fifteen minutes, if for eating, cook for one-half or three-quarters hour. Then remove the can from the boiling water, wrap with a towel so the air will not strike the glass, fill with boiling water and seal.—J. A. Howard, Hammond.

With Sugar. Wash the fruit and after draining fill into the jar. Place the cover on, but do not fasten it. Place in a vessel containing cold water, enough to cover about two-thirds of the jar, and let it remain until the water in the vessel boils—and also the fruit in jar. Then take out and fill with syrup made by boiling together one and one-half cups sugar and one cup water.—Mrs. E. A. Farmer, Minneapolis.

QUESTION.—"What is the best time to plant the peony, early or late?"

Mr. J. P. Brown: The catalogues advise fall planting, but I have had very poor success with fall planting. They do not make as much growth as when planted in the spring, and I never lost any planted in the spring.

Prof. Green: Would you prefer spring planting?

Mr. Brown: Yes, I believe I would, if we did not have a bad season; it depends somewhat on the season.

Prof. Green: What do you call early planting, before the middle of September?

Mr. Brown: Yes, sir.

Prof. Green: Have you not had good success with fall planting?

Mr. Brown: I lost some, but never lost one in the spring.

Prof. Green: I set out seven hundred a year ago this fall and lost several hundred. I took some chances on it, and I don't think it was the fault of the peonies. I set out two hundred last spring, and I lost perhaps ten, something of that sort, but they did not make the growth that those planted in the autumn made.

Mr. Wedge: That is the point. If planted in the autumn you will lose a few more plants, though you ought not to lose so many if well mulched, but they make a greater growth by half than those planted in the spring. We always planted ours in the spring.

RENEWING TOP-KILLED TREES IN NURSERY AND ORCHARD.

B. E. ST. JOHN, FAIRMONT.

This subject is one that I am afraid that I have not had enough experience in to make my remarks interesting to you.

When I first came to Minnesota, some thirty-five years ago, it was the general opinion that we could not raise apples in Minnesota on account of the severe winters. After being here a few years, we started our first orchard of 100 trees. A few of these proved to be Duchess and are yet alive and doing well; a few were Transcendents and Hyslops, and these lived to bear good crops of crabs, then blighted and continued doing so until they finally died; the

Residence of B. E. St. John. A Malinda apple tree in the foreground.

balance of the trees proved to be too tender for this climate. We renewed this orchard by replacing the dead trees with Wealthy, Patten's Greening, etc.

In starting our next and present orchard, we knew better what kinds to plant, and where trees proved true to name we have had good success. Our experience has been that (with the exception of blight) we have never had a tree in the orchard top-killed without first being root-killed; sometimes in the nursery we have a few

grafts top-killed by freezing back, but this seldom happens if they are properly cared for before the ground freezes.

The way we renew top-killed trees in the orchard is as follows: If the tree is not badly damaged by freezing back, blight or other causes, we cut it back to sound wood; however, if badly damaged from any cause, we dig it up and plant in its place one that in our opinion is a good tree. We do not believe in trying to save a dying tree by top-grafting. This method seems to me like the girl marrying an inebriate to save him from a drunkard's grave and then disposing of him with the butcher knife or something of that sort. She eventually has to replace him with a sound man or do without. When we top-work a tree, we take a good sound tree to work on.

In the nursery, where a tree is top-killed it is liable to be root-killed, and we dig it up and put it on the brush pile; if it is not root-killed, we cut it back to the ground.

We have been very favored in our locality by not having much blight, with the exception of the summer of 1905, and also have lost very few trees by too cold weather.

I do not want to convey the idea that a blighted tree cannot be saved by cutting out the blighted wood, but I do think that where a tree blights badly and keeps it up that the best way to renew the tree is to dig it up and plant a good one in its place.

In conclusion, I would say that in ninety-nine times out of one hundred, dig up and burn up your top-killed trees.

Mr. Geo. A. Kellogg (Wis.): I would like to ask whether in replacing an old tree he sets the new tree in the same hole.

Mr. St. John: Yes, I set the tree in the same hole.

Mr. A. J. Philips (Wis.): Would you dig up an old tree and set a young one in the same place?

Mr. St. John: Why, yes, but where I live the trees are young, and I have scarcely lost a tree. I have not averaged one in fifteen years, but they are not old enough to tell what success I may have.

Mr. Philips: Well, you won't have much success. You want to move away from the old place from five to eight feet.

The President: Can't you fertilize the soil?

Mr. Philips: Yes, but you can get another place easier. (Laughter.)

Mr. St. John: Then you don't believe in the doctrine that you can put a tree in the place of an old tree.

Mr. Philips: Yes, you can, but you have to renew the soil. It takes an element out of the soil that manure does not put back.

Mr. St. John: By properly fertilizing can you not put the elements back again?

Mr. Philips: If you knew what they were, but I don't know all that.

Mr. Kellogg: O, just put in a wagon load of new soil.

Mr. R. A. Wright: Just a word more in regard to setting a tree in the place where an old one has died. Some have got the impression that where a tree was two, four or five years old it would not be proper to set another tree in its place, yet that would leave a vacancy if the tree were set to one side; it would leave an open space in a row. It seems to me it would be no harm whatever to replace a tree that has not been out longer than five or six years, but to replace an old tree that has been there for years and years would not be practicable. But to replace a tree that has been out from six to eight years, putting the ground in good condition, there is no objection.

Mr. G. A. Anderson: I always dig out the soil where the old tree stood and put the new tree in the same hole, using the dirt.

The President: Do you use any fertilizer?

Mr. Anderson: No.

Mr. O. W. Moore: If a tree has stood in the orchard for some time it is proper to dig it up and get it out of the way if it is dead. Dig the hole deeper than it was before, say a foot. Take the top soil and put it where you wish to set the new tree and then set the tree on that top soil and fill it with top soil, and if it is properly cultivated and taken care of I don't see why it will not grow as well as the first tree.

Mr. R. A. Schutz: I have had a little experience along the line of growing apple trees for some thirty odd years. A good many have died for me in that time, and as I hate to leave a place in a row vacant I dig them out and make the hole much larger and deeper than it was before. I do that in the fall of the year, and in the spring I plant another tree, putting in a new subsoil. I use only the virgin soil to fill in, and I meet with good success in that way.

Methods of Packing Apples.—To facilitate handling fruit for packing, a sorting table should be used, which should be about waist high, four feet wide and long enough to accommodate the desired number of sorters, or what is known as a running table with a chute, with an apron at the mouth of the chute, for letting the apples down into the barrel carefully. When baskets are used, they should be half-bushel swing-handle baskets so they can be let down into the barrel and the fruit turned out without bruising

The barrel should set on a solid plank so it can be shaken well at least three times while being filled. The facing is done by placing by hand concentric rows of apples with the stem end of the apple facing the head of the barrel. These apples in all cases should fairly represent the approximate quality of the entire package. After the facing is done the apples may be turned carefully into the barrel from a round bottomed swing-handled basket or let down with the apron at the mouth of the chute. It is not necessary to face the upper head of the barrel, the person heading usually adjusting the apples on the head end in order to get the package as tight and secure as possible.

HORTICULTURE AT ST. JOHN'S UNIVERSITY.

A. W. LATHAM, SEC'Y.

The writer lately spent a very interesting twenty-four hours at the school referred to in the above heading. This is a Catholic school conducted under the auspices of the Order of St. Benedict and is said to be the oldest and largest one of its kind north and west of St. Louis or Chicago. It is located out in the hills one and one-half miles south of Collegeville, a station on the Great Northern road, and about fifteen miles west of St. Cloud. While it has been established in the neighborhood where it now is for some fifty years, it was only about forty years ago that it occupied its present location, which is an eminently desirable one. The buildings stand on the north bank of a beautiful lake, perhaps a mile across, the institution owning and occupying something like 1,000 acres around this lake. Of course

Lake view from St. John's University. One of the orchard sites in foreground.

the principal object of the institution is the education of young men, of whom some hundreds are in regular attendance. There is also very much interest taken in matters pertaining to the culture and care of the soil, and to this end there are extensive farm buildings and all the necessary accommodations for putting this idea into operation. The purpose of my visit there was to note the progress that had been made in experimental forestry and horticulture, which work was begun something like fifteen years ago. About that time Rev. Adrian Schmidt, now a resident of Minneapolis, inaugurated a system of forestry plantings which have been continued and cared for to the present time. They occupy a considerable tract on the north shore of the lake above referred to and consist in the main of various kinds of evergreens planted in different ways to secure definite results and note their success under varying conditions. The plantings

are on no small scale and run up into the thousands of trees. The comparatively long period elapsed since the planting of the first ones has given time for their development into very large and handsome trees, of which the Scotch pine and white pine predominate, with a good sprinkling of other varieties. We hope to secure a good account considerably in detail from the gentleman referred to above to present to our readers later.

The horticultural plantings, those pertaining directly to fruit especially, have been made and cared for by the Rev. John B. Katz-

'Father" John B. Katzner and Siberian crab in full bloom one year after planting.

ner, familiarly known as Father John, who on account of his long service there now occupies the honorable position of professor emeritus. This unique and interesting character gets much in life out of his trees and their products, as may be judged by the portrait of him appearing in an accompanying illustration.

It was a great surprise to the writer to note the remarkable success that he had achieved in the growing of hardy fruits in that region. Details as to this are not at hand at this writing, but pre-

vious reports from Mr. Katzner, who has kept our society informed as to the work there for some years now, have appeared from time to time in our monthly. There are in all several hundred trees in these orchards of varying age, the oldest planted some fifteen years. It was especially interesting to note that the three largest and finest bearing trees on the grounds are Wolf River, which show every appearance of absolute hardiness and are at this time loaded with a growing crop. Many other varieties appear hardy, and, indeed, nearly everything that Father John has planted looks well. The subsoil, while a clay, is not of the same character as that in the region of our state known as the "Big Woods," but seems to be, however, well adapted to this purpose. Besides apples, considerable experiment work is being done with pears and plums, also some crossing work, and there is lots of young stock and seedlings coming up in the nursery that Father John hopes to live and see brought into bearing —and we earnestly hope that he will too, as his work there is of much value to every citizen of the Northwest. Our members may expect occasional reports from this point and may rely confidently on them, as they are made by one who is a careful judge and conscientiously records the exact facts.

HOW TO GROW AN APPLE TREE.

S. D. RICHARDSON, WINNEBAGO.

Ground that will grow a good crop of corn will raise apple trees. It should be plowed in the fall.

As early in spring as the frost is out deep enough and the ground is dry, harrow thoroughly and commence setting grafts. In the spring of 1905 we had our grafts set and cultivated once in March. Set them in rows four feet apart, grafts four inches apart in row, or about 32,000 to the acre.

Stake two rows, commencing on west side of ground if the rows run north and south, and on south side if rows run east and west. Put the stakes eight or ten rods apart in the row and have them in line, for a straight row cultivates much nicer than a crooked one. Stretch a wire on the side of stakes toward the land and with a spade or shovel open a trench alongside of wire deep enough for your grafts, so that one or two buds will be above the surface of the ground.

If the trench should be too deep in places it is easy for the person setting (who is on his knees) to shove in some dirt with his hand to bring the grafts to the proper level.

As fast as the grafts are set a man follows with a rake and fills the trench partly full of dirt and packs very firmly with the foot; then fill trench full, packing slightly and smoothing off with rake. The grafts are set slightly slanting, for it is not an easy matter to open a trench with the side next the wire perpendicular, and it is easier to pack the dirt around the bottom of graft firm when the trench is slanting.

As soon as grafts are set, cultivate with some kind of six shovel riding cultivator with solid, not rod, shields. We use a Deere combined riding and walking as a rider. Set the front shovel so it will run about two inches deep, the middle one a little deeper and the rear shovel deeper still.

Cultivate through the summer as often as necessary (from twelve to twenty times) until August 15th; then sow the ground thickly with oats for winter protection.

If the grafts get covered with lumps they can be removed very quickly with a light garden rake. A hoe made from a five or six pronged manure fork works nicely removing weeds from the grafts. If the ground is so dry that oats cannot be grown for winter protection, it will be necessary to do something else to prevent root-killing. Once in our experience the oats were just coming up when the ground froze, and the most of the grafts root-killed. I think that if the ground had been covered as we cover strawberries they would have been all right. I have tried a right and left hand plough bending the tops down with a padded block and covering everything with dirt that way. I have tried cutting tops off in the fall and covering with plough, but like a good covering of oats best of all.

Sometimes in the spring the best way to prune one-year trees is to cut off close to the ground, and at other times to prune to a whip before leaves start. Care must be taken in summer pruning not to remove leaves enough at one time to check the growth. I have had trees ruined that way because the foreman had the big head and I was sick. The nurseryman grows trees to sell, and if his customers want tall-bodied trees he must grow them, but he wants to remember that he cannot grow a tree with good roots and nice body unless he has plenty of leaves.

Farther south, and in some locations here, trees are grown big enough to put on the market in two years, but it takes from three to four years at Winnebago to grow trees big enough so it will pay to run a digger under them. I have found that if trees are kept clean the first two years, they will grow and make good trees without hoeing if they are cultivated first-class, but the nursery looks much

better when clean. The nurseryman needs to keep in mind the Yankee rule, "To do every job first-class with the least possible expenditure of time and labor," and that one man that will take an interest in his work and has what the Yankees call "gumption," and western men "horse sense," is worth two men without these two things.

Mr. S. P. Crosby: About how far down in the soil do you set your trees in sandy ground?

Mr. Richardson: Well, you have got to have some man that knows. I know nothing about sandy soil.

Mr. Crosby: The section of country I come from in eastern Minnesota has a sandy soil. Is it not generally considered that a tree planted permanently should be set deeper than when it is set in the nursery?

Mr. Richardson: I have had good luck setting them down in the clay two and a half feet deep, and from two feet to eighteen inches.

Mr. Crosby: Do you put in all the roots, or do you clip off the ends?

Mr. Richardson: I like to dig a big hole and put in all the roots unless there is a root two or three feet long. In that case I cut it down to a reasonable length.

Mr. Crosby: I have heard men say sometimes that in putting down roots the ends of them should be taken off, as sometimes they will curl up and that causes the death of the tree.

Mr. Richardson: I do not know how that would work, to curl up the roots. The first trees I ever had in Minnesota I hired a man to set them out, and I gave him a common square spade to do it with. He said he did not know how to set out a tree. I told him everybody ought to know how to set out a tree and told him to go ahead. He dug a square hole—and it has always been a mystery to me how he could dig so small a hole with that spade,—and he had jammed the roots all together and stuck them in that hole. Out of sixty trees I had one left. I tried the Texas plan of cutting off the top and all the roots and planting them with a crow bar. That works all right in Texas, but not in Minnesota. (Laughter.) I have tried almost everything in the way of methods of planting that I have ever heard of.

Grade Apples Carefully.—As a rule, I would advise that all varieties in our climatic conditions should be packed as they are picked from the trees, handling as little as possible. The next detail to determine is what you are going to pack, whether No. 1, No. 2, orchard run or culls. After this is determined, and you know what constitutes the different grades, pack it that way and mark in that way, put your name upon the package and make it stand for something and do not do, after the manner of too many when their fruit before sorting would not grade even No. 2, sort out the best and simply because it is the best there is, brand it No. 1, when in reality there is no No. 1, and many times not good No. 2. All the specimens in a package should grade up to a more or less uniform standard of shape and size.

OBSERVATIONS ON GRAFTING.

CHAS. F. GARDNER, OSAGE, IOWA.

This is not what might be called a commercial way of inserting scions, as there is no nursery, to my knowledge, now or at any time in the past, which has offered this line of trees for sale, and what is true in the past will no doubt be true in the future.

The idea is this, that any one, no matter where, if he has trees already grown, one or many, beginning to bear, and wishes to change them to some other variety, this is one way to do it, without money and without price, only a few moments of time and a little care. It will always be a pleasure to you to show those trees to your friends as the result of your handiwork.

Last spring we had about one hundred plum trees, Americana stocks, that would caliper over two inches at the collar, and, wishing to change them to many other varieties for the purpose of securing cross-pollination in nature's way, I concluded to try the method as reported by Mr. Wyman Elliot and by Mr. Patten, who attended the Plant Breeders' Association held at Lincoln, Nebraska. I removed from three to four inches of earth round each tree, and sawed the stems off on an average of two inches below the top of the soil. I spent a half day in trying to fit a scion with the use of a saw and oval harness knife, as explained by Mr. Elliot, but finally gave up in despair as I could not make a satisfactory junction that way. But I proceeded to do the grafting, though I did not use the saw, after cutting off the stems. I used the five inch oval harness knife and a mallet, cutting a downward sloping cut on the east and on the west side of the stocks. In these sloping cuts were inserted scions from eighteen to thirty-two inches in length, the scions on the east side being all of some variety of Domestica, while those on the west side of the stock were of some variety of Americana.

I used wool twine for wrapping, going round the stock six or more times as tight as it could be drawn by the hands, and then made it tighter by the insertion of a wedge, driven in on one side, half way between the two scions and between the stock and string. No wax was used. The earth was then replaced, packing some of it firmly about the stock, stakes driven, scions tied thereto and labeled. One great point essential to success is the proper staking of the scion, when set, and keeping the plant well staked and tied for three or four years, until all danger of splitting is passed.

The scions were set the first week in April, and the most of them were cut as used, being at that time in a dormant condition. The stocks were in rows east and west, so that each scion stood in the middle of the row. They are now eight months old, very heavily branched, and are from thirty-six to seventy inches in height above where the scion was inserted, with an average caliper of one inch. Apple trees grafted in the same manner have done remarkably well.

MY COMMERCIAL ORCHARD.

J. F. BENJAMIN, HUTCHINSON.

My experience in orcharding has been principally limited to the past six years, except when a boy at home on the old farm near Hutchinson, McLeod county, where my life was spent from April, 1861, to 1890. Here I helped plant out 200 to 300 apple and pear trees and many wild plums. The apple and pear trees were nearly all a failure, as was the case with most orchards planted out in Minnesota in the early seventies. There were forty to fifty crabs and a few Duchess survived for several years, and at the present time there still remain of the original planting about thirty crab apple trees, which bear annually, mostly Transcendents.

I was married in October, 1889, and the following spring with my wife left the old home, taking Horace Greeley's advice, "Go west, young man." We struck out for Pierce county, Nebraska, and settled on a piece of wild land eight miles from the town of Pierce. Here we toiled hard for ten years. During that time I broke up over 800 acres of raw prairie, and my time was spent in raising small grain, corn and stock, and also the last few years fed several carloads of cattle, sheep and hogs, which I shipped to the South and to Omaha and Chicago markets. I also during this time planted out several acres of timber for windbreaks, and at once perceived the idea of using a check wire from one of my corn planters, in order to get my trees in line each way. I was so well satisfied with the result, that now I would not think of planting out an orchard or grove without a check wire. This wire is three feet eight inches between buttons and has a coupling every four rods. I take off as many of these four rod lengths as I need so as not to be bothered with the whole roll. I use this implement also in planting strawberries, raspberries, currants and all small fruits, and many kinds of vegetables in the garden. I do dislike to see crooked rows about as bad as I do to deal with a crooked man.

In the spring of 1900 we closed out our effects in Nebraska and returned to Hutchinson, and bought a bare piece of land adjoining the city limits on the east. Choosing here a beautiful location, I built a home and have christened it "Highland Home," where all horticulturists will receive a cordial welcome, and I shall be pleased to show them through my young commercial orchards, which I will try here to explain, my mode of planting, care, etc.

In the first place I have my land plowed deep in the fall and harrowed down well, and either rolled or floated. I have adopted

the plan of sowing the ground to be planted to orchard to barley or some other small grain before planting my trees—and I mulch as soon as planted.

I stretch and stake my wire about three inches inside of where I want my first row of trees to stand, and if the rows are long I use three or more ten-foot poles, one at each end and one or two between.

I begin by one of the buttons which comes nearest to where I want my end tree. I stand one foot on the wire and face with the row and with spading fork dig a hole on the outside of the wire by every sixth button, and as much under the wire as is con-

Mr. J. F. Benjamin, Hutchinson.

venient. I dig holes twenty inches or more in diameter, according to the size of trees to be planted, and about two feet deep. When I get the first row of holes all dug, I measure two lengths of each pole, or twenty feet, from the wire at each end and middle, and stick each pole exactly twenty feet from the wire, and at right angles with it.

Now I take a bundle of trees, just enough for one row if I can —and if the weather is drying or sun shining I take a piece of wet burlap or blanket and wrap around the roots. Now I fork down the side of hole, to fill hole to desired depth, thus having several inches of moist top soil to plant my trees on. Then I put in my tree about six inches deeper than it stood in nursery row, slanting

slightly to the southwest, and about three inches from the wire and opposite the button.

I spread out the roots, scratch in a little fine, moist soil, and with hands fill all hollows under large roots. I then put in three to five inches of good, fine soil and tramp firm, then fill and tramp until the hole is nearly full and so on with each tree in row. Now I pull up the wire stake at this end and do not stake it until I have staked the one at the head of orchard first, so as to always pull from the same end of wire. This stake I am careful to stake down at right angles, to the way rows run, so I usually stick a little stick each time in the hole where this stake stood. I stick the stake which holds the wire in line with these sticks each time, so all the rows looking crosswise of the orchard, when all trees are planted, will be just as straight as the row of little sticks.

Now I take a long-handled shovel and go back along my first row and scrape in fine dirt around the trees, leaving the soil loose and level, and if my rows are long I move the wire over against the centre poles as I pass them. When all the holes are filled, I pull the wire, throwing it over against poles as I jerk it tight, and stake down, being careful that the wire is straight. Now I leave my shovel here and take up my spading fork, which was left at this end, and dig a row of holes back to the other end, being careful to start with the button which will break joints with the trees in first row. Now when I am back to the starting point I am ready for another bundle of trees, and if I am planting several varieties I am careful to choose trees for every other row of an upright habit. This makes the orchard more uniform as to space when the trees are large.

Then I proceed with the second row as with the first. After the fourth row is in I do not have to count buttons, I just walk along the wire to where the first two diagonal rows cross each other, and these will indicate the button to dig by. Any person the least bit careful need make no mistake.

If I have room to drive out and turn outside of the end of the orchard, I plant an evergreen in the jog where every other row is set back, which makes a very pretty heading. When I get through planting, my trees stand in rows in every direction and are more easily cultivated, as I cannot touch two trees at once with the large three or four-horse machinery, so that I have only one tree to watch at a time, and so I can work closer to them, and they also have more room.

I cut three swaths between rows with a six-foot binder, using two horses, so as not to tramp down so much grain. I have only a narrow strip of grain left in each row, and this I cut with a scythe and stack loose as soon as dry.

I plough the ground as soon as possible and do not plough the same way two years in succession. I plough against the trees the first year and the second year from the trees, using one horse and an eight-inch plow with shift clevis, close to the trees, where

Mr. J. F. Benjamin in one of his commercial orchards. A five year old Patten's Greening in the foreground.

I cannot safely use two horses or the gang plow, and then harrow as soon as ploughed, first lengthwise and then diagonally.

The scattered grain will then come up and make quite a protection for the trees. Young trees I also mulch with coarse manure, and the next spring sow with barley as soon as it can be well harrowed in. I do not scatter the mulching except what the harrow takes away, and after I finish harrowing I take a fork and replace any piles of the mulching that will hinder the growth of the grain and add more mulching where needed.

In sowing my orchards to grain in this way, I can raise just as much grain to the acre as though the trees were not there, and this can be kept up until the trees will bear fruit enough to pay for the use of the land, and then I sow clover with the last crop of grain and cut it three times a year or pasture with hogs, and I think it is a far better way than to let the orchard grow up to grass and weeds. I prefer barley, as it is a shallow feeder and is on the land but a short time and leaves the land very porous, and the land can be ploughed early before much of the foul seed is ripe.

I prefer large two-year-old trees for planting, especially when I grow my own, as they are much easier dug, and a person is apt to get most all the roots, so that replanting them does not give them such a backset, and they do not require so much trimming as older trees, where oftentimes three-fourths of the roots have been cut off in digging. Most trees will bear one year earlier if planted out at two years than if set at three or four. I use a spading fork for digging single trees. I can dig two-year-old trees from the nursery row with the fork about as fast as I can raspberry bushes, and I do not cut the roots, and they are much quicker planted and more sure to row.

A year ago I planted an orchard of nearly 200 two-year-old trees. According to my method I performed the labor alone and dug about forty trees from the nursery row—the balance I uncovered from the pit—and finished up in just eight hours and forty-five minutes, and every tree grew. Now, if there is a man in the room who has a method that will beat this, and by which I can save time or make more trees grow, I would be glad to hear of it.

But I am quite sure that there is not one here who has used a check wire and spading fork as I do, that will ever be satisfied to cross-furrow his ground and leave it rough, or take a half day for two men to stake out the ground, and then not have the trees in line after they are planted, not even one way. Many farmers could be induced to plant out large orchards if they knew they would not lose the use of their land for five or six years and could keep them clean without much trouble and expense.

The raising of many varieties of apples in Minnesota is no longer an experiment, and by choosing the varieties recommended by this society a person will have but little difficulty in raising plenty of apples, and the time has come when there is no need of a farmer in this state being very long without fruit. Often when my wife says she is tired of cooking, I tell her, "I can live three times a day on fruit." The man who engages in horticultural work will leave behind him, when he has passed to the great beyond, the best kind of monuments, that will live for ages after his grave is green; the man who causes one tree to grow where none grew before is a public benefactor.

WINTER GRAFTING.

A. O. HAWKINS, EXCELSIOR.

Whip-grafting, also called tongue-grafting and root-grafting, is the method used for winter grafting indoors. For best results in Minnesota the scions (of one year old wood) should be cut in November, on mild days when not frozen. Collect only well matured wood. Tie in bundles of about fifty and pack in layers in boxes, using green sawdust or sand around each layer. It is safer for those not experienced to repack each month to avoid loss by mould, drying out, too wet, etc.

The seedling roots in this state should be dug latter part of October. Cut off the tops five or six inches above the crown and strip off all remaining leaves. Tie in bundles and store in the cellar, using green sawdust or sand for packing. Before using, cut off all fibrous roots.

February is the best month for root-grafting. The grafting may be done in a moderately warm living room if the roots and scions are kept packed, only unpacking and using one bundle at a time.

A cleft root graft.

The piece root-graft, the root about three inches long, is the best to make for our severe climate—the scion about six inches long. Most varieties of apple will root from the scion when pieces of root this length only are used. The roots emitted from the scion are hardier than the seedling root, and it is safer to have the seedling root, which is of unknown hardiness, four or five inches below the surface of the ground.

On the lower end of the scion make a sloping cut about one inch long. A very sharp, thin bladed knife should be used. A shoemaker's Harrington knife is very good. The cut should be made in one fast, steady, forward movement of the knife, to get the cut smooth. On the sloping cut, about one-fourth way from the butt, make a slit by a downward cut about three-fourths of an inch long. Cut the scion or scions off in lengths about six inches long, aiming to cut about one-eighth of an inch above a bud. Next take one of the seedling roots and, beginning at the

crown, make the same cut and slit as nearly as possible like those made on the scions. Unite the root and scion by forcing the slits to interlock. Care should be taken to get one side of the root and one side of the scion perfectly level where united—the bark line of the scion should come exactly in contact with the bark line of the root, as it is these two bark lines that grow together. The root should be thicker than the scion. No attention is needed to watch the other side of the graft, as it is usually only possible to get one side fitted properly. A well made graft when held up to the light should fit so closely where united that daylight cannot be seen through the slits; however, this is not absolutely necessary, but for best results they must be united closely.

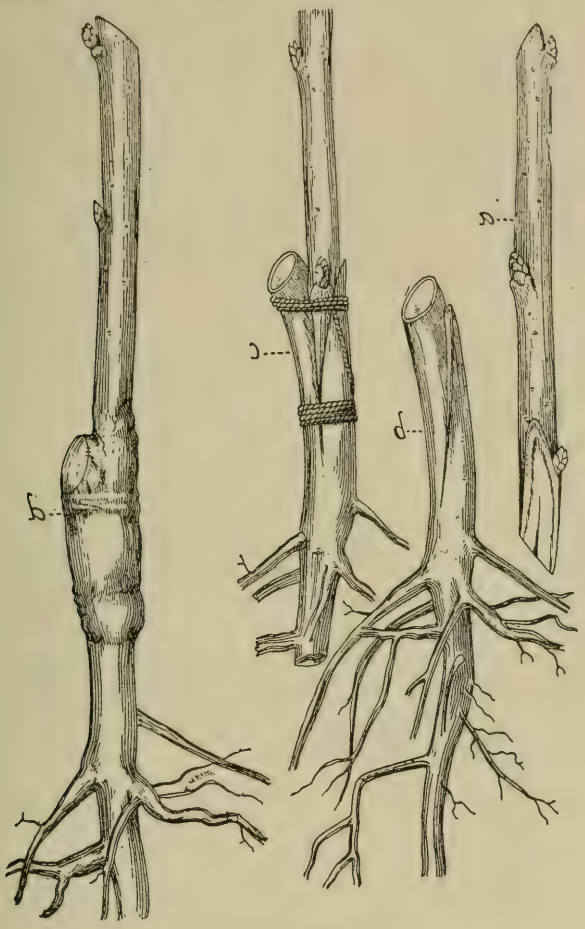
Experienced grafters generally make fifty to one hundred scions ready to be united to the roots, but the root is cut one piece at a time and a scion joined to it at once. This is to keep the dirt out of the slits and to have the butt end up. When several hundred grafts are made before wrapping, they should be kept between two wet sacks.

The union should be either waxed, wrapped with waxed paper, waxed cloth or waxed knitting cotton. The writer believes the best results are obtained in the order named. Most nurserymen use number eighteen to twenty-four knitting cotton which is prepared by placing the balls of knitting cotton into a kettle of melted boiling wax. Turn the balls constantly for three minutes when they should be taken out at once with sharp sticks and placed standing with ball end up where they are to remain until dry.

The wax is made of two parts beeswax, by weight, four parts resin and one part tallow. Stir constantly until melted, when it is ready for use. The waxed paper is made by spreading hot wax over a newspaper with a brush. When dry cut into strips about one inch wide. When wrapping, press the two parts together firmly. Begin wrapping at the bottom of the union, wrap two or three times around at this place, work up to the other end of the cut by wrapping two or three times and finish by wrapping a few times around the upper end of the union. Break the thread off, and the graft is finished.

Next comes packing away the grafts properly. Green sawdust is most frequently used. Sawdust three or four years old is worthless, and if used may ruin every graft packed in it. Fresh pine sawdust is best and should be prepared if frozen or too wet. Material for packing should be damp, not wet or dry. Pack in tight paper lined boxes. The grafts may be tied in bundles of

fifty or one hundred each, and all bunches labeled to avoid mixture. Pack the bundles together as closely as possible. No packing is needed between the bundles, but it should be used about one-half inch thick around the inside of the box and



SIDE GRAFTING.

a. Shows scion cut wedge shaped.
d. Stock with oblique cleft for reception of scion.
c. Scion in place tied with waxed thread.
b. Joint covered with wax.

above each layer. Finish by nailing the cover on. Store in a cool cellar until spring. It is safest to repack every four or five weeks.

Plums.—The ordinary method of propagating the plum is by shield-budding in August and September or by crown graft-

ing in early spring, but the writer has had excellent results winter-grafting with piece roots five or six inches long. The Americana stocks were dug in the fall and stored away in a storage cellar heeled in in sand. The grafting is done in March, when the scions are collected as needed for the day. The side-graft is preferred. All cuts except the lower end of the root is painted over with hot wax. The grafts are heeled in in sand, standing, and the roots only are covered.

The President: Mr. Hawkins has given us a very excellent description of cellar grafting. I would like to ask in regard to cutting scions when frozen, is there any harm in that?

Mr. Hawkins: I am not so sure that there is any harm, I hardly think there is, but I think it is safest to cut them before freezing.

The President: I have never been able to note any difference.

Mr. S. D. Richardson: I have cut lots of them when frozen. If you have a dark cellar, that is all you want. I have never found any bad results by cutting them when frozen, and I have cut them when it was so cold I had to wear mittens.

Mr. W. J. Moyle (Wis.) I would like to ask Mr. Hawkins whether he cut plum scions every day.

Mr. Hawkins: I cut them as I used them, because it is difficult to keep them in a cellar.

Mr. O. W. Moore: My experience is that we should waste no time after cutting the scions.

Mr. Hawkins: The earlier you cut the plum scion in the spring, the better.

Mr. Richardson: I have good success in cutting plum scions in the fall and keeping them through the winter, but I have kept them in the dark and kept them dry. If you let them get damp, the bud is ruined, but under proper conditions you can keep them right through.

Mr. Philips: The best way to do is to cut them as you use them.

Summer Work against Canada Thistle.—The Canada thistle spreads over large areas or travels long distances by means of its seeds and grows into patches through its perennial running roots. Both of these means are effective in their way. Perfect seeds are not often produced until after the plants have become well established and have spread to some extent. The seeds are carried from farm to farm by the wind, and along streams by water. They are mature from midsummer onward through the season, and, as they are easily detached from the heads by slight breezes, most of them are disseminated before the hard winds of late autumn and winter begin to blow.

Mowing twice a year, just after the flowers open, usually in June and August, will keep the plants in subjection.

PROPAGATING PERENNIAL FLOWERS.

GEO. W. STRAND, TAYLOR'S FALLS.

Nature has wisely provided for the reproduction and perpetuation of general types and species of plants by one or more of the following methods: spores, seeds, bulbs, corms, tubers, suckers, root sprouts, stolons and rootstocks.

By intensive culture and hybridization we have changed many of the general types, and it is to increase the stock of these better types as rapidly as possible that we rely on other methods. For this purpose grafting, budding, layering and cuttings of both top and roots are sometimes resorted to. Until the general type has become broken, the plants usually come true from seed, and many of these newer types will also thus reproduce themselves.

Almost every one is familiar with the lily of the valley, the achilleas and the golden glow, or the rudbeckia, and will hardly need to be told how they are propagated. They increase so rapidly from underground rootstocks as to be soon "crying" for more room and soon deteriorate if not transplanted or thinned out and fertilized often.

Peonies, iris, hemerocallis, funkias and bleeding hearts are commonly propagated by division of the roots and crowns. Hence, as they do not spread or grow together as quickly as many of the other perennials they can remain in the same place much longer to advantage, but in nursery propagation they are usually divided every second year and sometimes oftener. The bleeding heart, or dielytra, also grows quite readily from root cuttings—as do the phlox and oriental poppies.

Lilies have various methods of increasing. All of them reproduce themselves by division of the main bulb as it grows older—which also is the case with tulips. The outside scales of the bulbs are also used to increase the stock of rare varieties. These scales when planted in flats of sandy soil form bulbs on the lower end but are left in the flats until the second season. Some varieties of lilies, like the Elegans, Auratum and Speciosum, when planted deeply in light soil—as they always should be in this section—form bulblets along the stem under ground. Many of these mature into bulbs if not damaged, or they may be taken up and grown for a season in flats or a seed bed. The tiger lilies, as is well known, produce their bulblets in the leaf axil, and these should be planted as soon as mature. It takes two or three years for these bulblets to mature to a blooming size.

Most of our other hardy perennial flowers increase rapidly and readily by division or may be grown from seed. There is a great variation in seedlings of some sorts, such as the phlox and Shasta daisy. Others, such as columbine, pyrethrum, larkspur, oriental poppy, gaillardia grandiflora, yucca, etc., come very true and are usually grown from seed.

The choice varieties of phlox are sometimes increased much the same as some of our shrubs: that is, by layering and from green wood cuttings. If done in June and July, they will be well rooted by fall and may be transplanted, or early the following spring. The cuttings should be made about three or four inches long, and all except a portion of the upper leaves removed. Hotbed frames make an ideal propagating bed, and if given a little bottom heat from manure they will root more readily; otherwise, if the soil is cold, watering with tepid water is beneficial. The soil should be almost a pure sand and kept well watered, and the beds covered with cloth or burlap to prevent too rapid evaporation until the plants become rooted somewhat.

Nearly all flower seeds are very small, and hence it stands to reason that they should not be planted deeply. The above conditions mentioned for starting cuttings are also favorable for the germination of seed. They may also be planted in flats and covered with burlap or glass or the flats placed in these frames. Seed of hardy perennials may be planted in the fall when mature, and the plants given a light mulch during the winter. Phlox seed, especially, is much surer to germinate if planted at that season.

The seedlings grow slowly while young, and hence it is best to bed them out as soon as large enough to handle, transplanting them in the fall or following spring to their permanent place.

As people become better acquainted with this class of flowers, the demand for them naturally increases. They are easily started, and many of them bloom the first season from seed. They require the least possible care and spring up each season with increasing thrift. Although they thrive even under neglect, they richly repay for added attentions and encourage one to take a greater interest in them and in having more of them.

Mr. Henry Husser: Do you propagate cannas?

Mr. Strand: I do not do anything with that class of flowers.

Mr. Husser: Has any one tried to keep the roots in good condition to plant in the spring?

Mr. W. J. Moyle, Wis.: I would state that most of the French hybrids and most of the varieties, in fact, are of such a nature,

or so constituted, that to store them in ordinary temperature in the cellar they will not keep, but there is a variety called the robusta that is a valuable canna. It is a green-leaved variety and will stand a great deal of abuse, and the root can be kept in the temperature of an ordinary cellar very well, but it will not pay any one to attempt to store any other variety. It is better to buy the roots in the spring. I have grown a great many cannas from seed. You can buy the seed from seed men at quite a reasonable price, and you want to buy in considerable quantities because some will not germinate. The way to treat this seed is to take it about the first of March and put it into a common fruit can and pour in water as hot as the can will bear and place the can on top of the warming oven for two or three days until the seeds begin to swell to about twice their natural size; then place them in an ordinary soil, and they will grow. I have grown thousands. I might say tens of thousands of canna plants from seeds, and they are just as succesfully grown as those grown from the roots.

Mr. Husser: It is really an interesting thing to raise cannas from seed, but if you raise some nice cannas, you want to keep them over, as it is only the root that will again produce the same varieties.

HOME STORAGE FOR FRUITS AND VEGETABLES.

F. B. MC LERAN, WRENSHALL.

I believe more fruit and vegetables are lost every year through improper storage than through any other cause, as how to successfully store vegetables and fruit at home and upon the farm is a problem that few, as yet, have solved. When we look about us and see the immense storage plants of the packers, the dairymen and the commission men; when we know they keep eggs, butter, meat and fruits for months, finally disposing of them at great profit—we realize that they have found a solution of the problem.

This paper will deal, however, only with the winter storage at at the farm. The main requirements are, *first,* uniformity of temperature; *second,* darkness; *third,* a correct amount of moisture.

These essentials can be best obtained, and mantained, in what is commonly known as the root cellar, a cellar entirely covered with earth. Being entirely covered with earth, the outside temperature does not readily affect the inside temperature, thus avoiding the sudden changes that are so injurious. The earth covering also furnishes about the correct amount of moisture for our vegetables and apples, just enough to prevent them from withering up, and not damp enough to rot them. Never put a house, barn or building of any kind over your cellar, if you want the best results.

More stuff—ten times as much—is ruined by being kept too warm as is spoiled by being kept too cold. Keep the temperature of your cellar as near forty degrees as possible—never warmer than this—and the nearer the freezing point you can crowd it without actually freezing, the better.

Be sure all stuff is thoroughly cooled in the fall before you close the cellar doors for winter. Then keep it dark, and always use a lantern, and under no circumstances allow the daylight to enter.

Keep a thermometer always in the cellar, and should the temterature threaten to go too low, place a lighted lantern in the cellar for a while. This will raise the temperature of a 2,000 bushel cellar about three degrees in twenty-four hours.

Take as much pains to keep in the cold in the spring, as you do to keep it out in the winter. To this end, as soon as spring is near, cover the earth on top of cellar with manure or straw and put it on good and thick, so as to keep the frost in the ground just as late as possible. Keep the doors shut tight to keep the cold in. Thus you have a little cold storage plant in the spring and early summer, and when others must sell their goods at what they can get, or see them rot or wither, you can hold yours from four to eight weeks longer and then sell at your own price. By following these directions I have kept, year after year, all kinds of vegetables until very late in the spring and summer. I have kept potatoes until August, cabbage until June 25th, carrots until June 15th, beets until August, rutabagas until August, parsnips until May.

A word as to construction. I believe the coming age is going to be the cement age. In any event I prefer the cement root cellar. Floors, sides and roof all should be of cement. Next to this use stone, and if you have nothing else, use wood.

Place drain tile under walls and floor and provide an outlet for them. Make doors four feet wide and at least six feet high, so you don't have to "duck" your head every time you pass in or out. Provide shutes, similar to a coal shute, and shute your vegetables in—don't carry them in by hand.

Provide a ventilator. Have double doors and have them fit tight. Use the same latch as is used in our large ice box door. If you will faithfully follow these few simple directions you will have *a successful home storage for fruits and vegetables.*

Secretary's Corner

Return the Supplement.—Important information is asked for in the circular sent out as a supplement with this number, and it is hoped no member will fail in promptness in returning it fully filled out to the secretary.

Membership Roll.—Since the statement as to our membership roll made in the August issue, sixteen names have been added to the annual roll, making it 2229. One name, A. Durbahn, of Sleepy Eye, has been added to the life roll, bringing the total membership to 2429 for the current year.

A Visit to the Wisconsin Experiment Orchard Stations.—Upon Invitation from the secretary of the Wisconsin State Horticultural Society, Mr. Frederic Cranefield, we sent a representative of our society with the committee from the Wisconsin society upon its regular annual tour of inspection of the various experiment orchards operated by that society. Mr. Leroy Cady. Prof. Green's first assistant in the horticultural department of the State University, was our representative. The tour of inspection occupied the week beginning Aug. 5th. A full report of the work being carried on at these stations and results so far achieved may be expected from Mr. Cady at the next annual meeting of the society.

Annual Flower Show of the Minnesota Rose Society.—This enterprizing organization held its annual exhibit of flowers in the mayor's reception room in the Minneapolis court house on July 13th. The writer was unable to be present on account of absence from the state but noted the press reports as to the success of the occasion, which a later communication from the secretary confirms. A large number of premiums were awarded, approximating $200, divided amongst the following successful exhibitors: Mrs. C. J. Miner, Mrs. Dungan, Mrs. H. B. Tillotson, Mrs. A. T. Moot, Mrs. Alice Johnson, E. A. Farmer, E. L. Anderson, Rose Hill Nursery, Ralph Johnson, Jack Tillotson, of Minneapolis; Mrs. Wm. Lorenz, Eureka; Mrs. F. H. Gibbs, Alice Gibbs, of St. Anthony Park; Mrs. T. L. Wann, White Bear; Mrs. D. W. C. Ruff, St. Paul; B. T. Hoyt, Mr. C. Bunnell, of Merriam Park; F. F. Farrar, White Bear.

The Apple Outlook.—Mr. C. E. Bassett, secretary of the Michigan Horticultural Society, has taken a great deal of pains to gather together information as to the orchard conditions in the country generally and especially, of course, in his own state. His summary of the apple crop is that not over half of the average crop is probable in Michigan. New York he reports to have a good crop of apples. The big apple shortage in Europe will make great inroads into it. The apple crops of Missouri, Kansas and Nebraska are almost complete failures. Arkansas has a fairly good crop. A few good orchards in Michigan have been contracted from $2.50 to $3.50 per barrel for fruit picked and placed on the packing tables. Prof. Greene, of Iowa, summarizes the apple crop of that state at 50%. Minnesota fortunately, as far as reports indicate, is ripening this year an unusually large crop of apples. At probable prices there should be a good remuneration for apple growing in our state this year.

The American Breeders' Association.—A preliminary notice that the next annual meeting of this association will be held at Washington, D. C., January 28th to 30th, next, is already out. The usual good and interesting program is assured. Prof. W. M. Hays continues as secretary of the organization. There is a proposition on foot to raise the annual dues from $1.00 to $2.00 and also to raise a fund of $5,000 or more to help the committees organize and push their work and if possible start a monthly journal, and part of this amount has already been pledged. If any of our members are interested in the special work of this organization and willing to aid in its advancement they should communicate with Prof. Hays at the Department of Agriculture Washington, D. C.

Minnesota Nuts for Home Planting.—Mr. John Husser has a quantity of walnuts, butternuts and hickory nuts ripened on trees growing on his farm at Minneiska, Minn., and at the earnest solicitation of the secretary he has consented to furnish them to members of the society in limited quantities for home planting at fifteen cents a dozen by mail, postpaid, walnuts and butternuts twenty-five cents a peck by express not prepaid. They should be ordered promptly and planted this fall as soon as received. Mr. Husser suggests that they should be planted where they are to stand as it is difficult to transplant them, especially so when they are more than one year old. While they grow in most any soil they do best in ravines with black soil, but should never be planted in a boggy, wet location. They fertilize best when planted in clusters. It is absolutely necessary to protect the young trees from being eaten by the cows. This is a rare opportunity to secure seed of hardy varieties of these nut fruits, and we hope many will avail themselves of it.

A "Course in Fruit Growing".—Prof. S. B. Green during the past year has been occupying his spare time in preparing "A Course in Fruit Growing for Movable Schools of Agriculture", that being the title under which a pamphlet of one-hundred pages has been issued by the United States Department of Agriculture as Bulletin No. 178. The purpose of this work, which is well sustained throughout, is to provide outline studies as suggestions along horticultural lines for those who are conducting the farmer's institutes and farmers clubs and similar exercises. Beginning with the factors that make up a fruit growing section, following with cultivation and cover crops, fertilizer requirements, etc., the general field of fruit cultivation is gone over in the first eight lectures. Then follows a lecture on propagation of various fruit plants, and commencing with the tenth lecture the different varieties of hardy fruits adapted to the northern and middle states are taken up and discussed thoroughly. While this bulletin has been prepared for a special purpose, there is very much to be gleaned from it by anyone interested along the lines of horticulture in this latitude. We understand that Prof. Green is re-writing his book on "Amateur Fruit Growing" along the lines of this course in fruit growing, and our readers may expect before long to have the opportunity of securing this new edition of his practical work on that subject.

Mr. Seth H. Kenney, Mrs. Kenney and granddaughter standing under a row of Duchess apple trees topworked with Malinda. At the time this picture was taken the Duchess apples, ripening first, had been gathered. A large crop of Malinda remains in the tops of the trees, to be harvested later.

THE MINNESOTA HORTICULTURIST.

VOL. 35. OCTOBER, 1907. No. 10.

ORCHARD NOTES.

SETH H. KENNY, WATERVILLE.

It has been my pleasure to be with you at most of the meetings during the last twenty-eight years. I have come here to hear those who are well learned in horticulture, and I feel that I have been well paid, because they have been a great help to me. I like to be with those gray heads I have been with so long, and I have tried in a small way and with the little time I have at my disposal to get some pointers in horticulture, and think perhaps I have something that may benefit some of you.

Our worthy secretary in giving me "Orchard Notes" has made it possible for me to mention several topics. One of greatest interest to me has been to find how to grow the standard commercial apples in Minnesota. My first attempt was twenty-six years ago in Lemhi county, Idaho, where the themometer has gone fifty degrees below zero, on a tree called the Gould crab, introduced by a Mr. Gould, of Beaver Dam, Wisconsin. Nearly fifty years ago I grafted on it a variety known as the Pewaukee, introduced by a Mr. Peffer, of Wisconsin, that has stood that hard climate twenty-six years.

About thirteen years ago in buying nursery stock of the Jewell Nursery Company of this state they sent me some grafts they called "Thompson's Seedlings." I grafted these on the Gould crab. It is a lower limb and is a large limb, and the variety is profitable and a good winter keeper. Five years ago I grafted Missing Link on the Gould crab and on the Virginia crab. On this last named crab all the Missing Link died. When I grafted this variety on other trees I lost the grafts, but I did not lose any grafts on the Gould crab. Of nearly fifty Missing Link trees, set five years ago, all died. This experience, added to my past experience, convinced me that the Gould crab would impart enough vitality to the grafts so I could in this way safely grow commercial apples.

Last fall, in company with Jas. O. Weld, we visited our former home in Massachusetts and secured from there and Vermont grafts

of the following varieties, grafting them onto the Gould crab April 10th, 1906: Roxbury Russet, twenty grafts; Davenport Russet, thirty-four grafts; a seedling, Bottle Greening, thirty-four grafts, and North Star, nine grafts. The tree that I cut the Bottle Greening scions from originated in Vermont fifty-one years ago. The largest apple tree I ever have seen of it bore fourteen barrels of apples in 1905. April 13th I grafted forty-one grafts of Arkansas Black and fifty-six grafts of the apple called Wilfert, by some thought to be Plumb Cider, also the same day grafted seventeen of the Bottle Greening on a Yellow Siberian. April 16th I set seventeen grafts of a seedling of Meader's Red Winter on Duchess.

I think the Duchess shows up well to impart hardiness to the Malinda grafts. They were set five years ago and are now about seven feet long and full of fruit buds for another year. I think grafting on the top limbs of the Duchess five years ago will prove a profitable investment. I think the cash value of the fifty trees so topworked at least $20.00 each and that they will pay interest on as much more than that. To prove the greater vitality of the Duchess as a stock to top-work I have had a tree bear fifteen bushels of apples, ripen up its fruit buds well that same year and bear the next year from twelve to fifteen bushels. I found an excellent apple in Buckland, Mass., which I considered nearly the quality of our Wealthy. I grafted this variety, one pound of grafts, on the 17th of April on the Duchess and on several trees younger than my Duchess, which were top-worked with Malinda.

On the 21st of April I set on the Alaska crab, for experiment work, a few Perry Russet, some Baldwin, a few Blue Pearmain. On the 2nd day of May on two Gould crab trees I grafted a seedling from Reedsboro, Vermont, that was named the Gem. The apple ripens in August. The owner said it was their finest early fruit. Have lately sent an order for the Gilflower, Rollinsland Greening and the Pound Sweet varieties. I have in bearing topworked two trees of the Patten's Greening that have borne four bushels each on young trees that I think were seedlings from the Gould crab, but am not sure.

I have grown two hundred seedlings from seed of the Gould crab the past season, and grafted six hundred scions on crab roots. I am not a nurseryman, but experimenting with this stock. When I can grow the tenderest apple I know of that will not grow under same conditions as other orchard trees grow, I think it is a reasonable conclusion that I can grow most if not all the commercial kinds of apples.

I account for the poor yield in apples the past season from the loss of so many leaves by the blight, which caused so poor circulation of sap. Most all the sprouts wilted that usually grow on a healthy tree, so that, as a rule, scarcely any fruit buds ripened for 1906.

My paper last year on top-working brought to me several letters showing some valuable experiments in top-working. I will give

Mr. Kenney behind a branch of Wealthy. Many such in his orchard this season.

you extracts. John Bisbee, of Madelia, Minn., said he had grown the Baldwin apple on the Hibernal the past two years; that he had used the Virginia crab, but liked the Hibernal best. I visited last June the large orchard of F. W. Kimball, of Austin, Minn. I had previously learned that he had by top-working grown Grimes' Golden and Jonathan. Last spring I procured scions of these two valuable varieties and set them onto Hibernal. The grafts did well the past summer. From a letter from Mr. Kimball, dated

November 25th, he says he has made in many years' experiments some failures, but he has had many excellent results. He said, "I have the Grimes' Golden, Jonathan, Seek no Further, Fameuse and many other kinds doing well." He said last winter, at the meeting of the Southern Minnesota society, he exhibited thirty varieties of winter apples, and that he has used Virginia crab but likes Hibernal best. Says he top-works most of his Malinda to make them hardier. He hardly trims any trees, but I noticed he mulched with stable manure. Says he has best results whip-grafting.

A letter from Edson Gaylord, Nora Springs, Ia., says he never sold any apple trees or had any to sell, but has had fine success top-working. He says the variety known as the Baltimore is with him a great success top-worked on the Minnesota crab. Says Grimes' Golden is doing well on Hibernal. Says the Fall Orange does well on the Virginia crab. Mr. Gaylord says that Ben Davis and Longfield are very much improved on Duchess stock. He says most of his experiments and what he has observed on other orchards has been since about 1883. He bought two Wealthy trees of C. G. Patten, in 1882, started on crab roots. Says Wolf River top-worked on Duchess in 1885 is bearing annually, that the Wealthy on crab roots survived when the other Wealthy died.

A letter from G. A. Ivins, of Iowa Falls, says he uses entirely crab roots. He speaks of the Hibernal as one of his choice stocks. Top-works different varieties; he wants to top-work at two years old.

I have given the experience of others, and I think it clearly proves that a hardy stock imparts to the graft vitality to apples we cannot grow in any other way. I have some valuable letters, and I shall turn them over to Prof. S. B. Green to get the points of value. These letters contain much material; I have only touched on their merit. It seems to me that Prof. Green is doing a noble work in interesting the state university boys in horticulture, and if he is not a life member of this society I would be glad to have this society recognize his usefulness.

Mr. Kenney: I might say that I grafted the seedling of the Gould crab on September 10. I dug down until I came to where the root branched out and then set the graft clear down on the crown of the root and waxed it with a very warm wax, so as not to injure the union. Then I covered that up almost to the top, and the last time I looked at it the graft looked really as though it were going to grow. I thought I would gain something by grafting in the fall.

Capt. A. H. Reed: Have you ever grafted this way previously?

Mr. Kenney: I simply did this as an experiment. I know we

can set out currant cuttings, and they will take root the same year, and I did not know why this experiment would not work the same way.

Capt. Reed: If the cuttings were put in the ground they ought to grow.

Mr. Kenney: These grafts were set down under the dirt, clear under the ground. In that way I thought I would get the same results as I do from setting currant cuttings in September. I am not positive until the thing is tested and know how it will come out, but it looks well.

Mr. Brackett: Was it covered with anything?

Mr. Kenney: Last winter I covered the whole thing with sawdust.

Mr. Brackett: Would you recommend planting and grafting this great number of varieties with the expectation of getting an apple as good as the Wealthy?

Mr. Kenney: I have done this simply as an experimental work and do not know what the result will be. I get a test of three kinds, the Russet, the Baldwin and the Greening. Some of those kinds do well east. I will say that I planted orchards away back in '59 of eastern trees and lost the trees, so I am sure they would be a failure on their own roots, but if we can put them on a hardy crab the result may be different. I have put four varieties of winter apples on the Gould crab and have not failed with one of them, and the question is whether there will be vitality enough to winter these top-worked scions. From my long experience with the Gould crab I would seem to be warranted in expecting good results.

Capt. Reed: At what time of the year have you had the best results with top-grafting?

Mr. Kenney: From the latter part of March to the middle of April. You will see by my paper here that I put in the date of my work in grafting the scions. I do not recommend this, because I do not know what it will do. I had faith in it, and I just did it to see what the results would be. It takes time to tell what the top will do.

Apples for European Markets.—Some big orchardists in New York and Michigan are already talking and in instances securing $3 to $4 per barrel f. o. b. shipping station for No. 1 winter apples. This will mean $4 to $5 in wholesale lots laid down in English markets and a trifle more in Germany, where an import duty must be met. A year ago at this time exporters had bought 100,000 barrels or so of Empire State apples at or under $2. Thus unless all calculations are upset it is easy to see that in all likelihood European consumers will be compelled to give fancy prices for apples during at least a part of the winter.

OUR UNUSED CAPITAL.

C. S. HARRISON, YORK, NEB.

A large percentage of the wealth of today comes from sources of which little was known one hundred years ago. Then the vast fields of coal were undeveloped, steam but little used, oil was undiscovered and the power of electricity unknown. The Bessemer process brought steel from $500 per ton down to $20. Now, all these things had been in existence from time immemorial; their development has made thousands of millionaires. Great possibilities yet lie along the margin of the unknown.

We have not yet gotten through with our discoveries in horticulture or floriculture; we have only touched the edge of an unexplored continent. Much has been done, and there is more to follow. We are millionaires and don't know it; we often keep poor in the midst of plenty. When the farmer goes over his land, too often it is a tramp over an unknown country—he does not know its possibilities. He is content to have full corncribs, granaries and barns, and ignores those attractions of beauty and comfort which are his if he would reach out and take them. The farm lies on the borders of immensity. The owner can draw out limitless supplies. No farmer on earth has yet reached his limit or used up all his capital. He has only seen the borders of his vast possessions.

Members of the Minnesota Horticultural Society, you have the best society probably on this earth! You are beginning to get hold of your possessions. You are realizing something of your rights and possibilities. In prophetic vision you saw millions of bushels of luscious fruits held in solution in the earth and air, in shower and sunbeam. You planted trees on which these floating elements could crystalize or materialize. You have learned to grab your own without taking that which belongs to others—there is no robbers' graft in the graft of the nurseryman. Your calling lies next to nature and to God. Our first parents were horticulturists, put in the Garden to dress it and keep it.

He who came to restore the wreck of the fallen was a practical horticulturist also. Human language never encased a fairer gem than this beautiful unmetered poem, "Behold the lilies, how they grow!"

The man who goes into the inner temple of nature and helps her work her miracles is honored among men. It is a devout work. "The secret of the Lord is with them that fear Him,

and He will show them His covenant." Beyond your most sanguine hopes you have moved the fruit belt northward hundreds of miles, to the amazement of the skeptical. Now there are other victories to be achieved. The very air above you is thick with gifts hovering like flocks ready to alight and glorify your home. Lined up against the horizons all around are vast armies ready to enter your gates and stand sentinel around you, and you haven't yet opened the gates.

It is astonishing what immense fortunes lie in a man's hands and brain if he will only think and work. You yourselves can be creators. "I said ye are Gods, and all of you children of the Most High." You enter His great fields, and you are in a land of astonishments. I little knew what was in store for me when eight years ago, broken in health and the wolf at the door, going to work without money save $200, I drew on the exhaustless supplies of nature, which brought to my door health, beauty and comfort. When I entered this happy land, which is not "far away," I left the door ajar, and you can come in too. It's wonderful! Trees of various forms and hues of beauty stand sentinel about me, some in garments of silver and sapphire. Flowers are everywhere, thousands upon thousands. They make their toilets in my presence and vie with each other to please me, and in June I am in the midst of a sea of glory. I am no visionary—not a parlor knight with theories. I have fought the battle and won the victory. I have found so much I want you to have a share.

You owe a great debt to Minnesota—land of the sky-tinted water! In 1857, when I came here, I thought it the most beautiful land on which the sun ever shone. I used to drive through thousands of acres of wild flowers overhung with billows of fragrance. There were grand forests and beautiful wild parks. The flower gardens have been turned into wheat fields, the beautiful forests have been cut away and where years ago stood lordly trees you now see houses as if planted on the lonely prairies, without a bush or tree around them. This departed beauty should be restored, and Minnesota should be the most beautiful land on earth, with her murmuring streams and her lakes flashing like diamonds on the bosom of Mother Earth.

On almost every farm there are two neglected gold mines, one in the front yard, and the other where the garden ought to be. Fix up that front yard! Plant a few fine trees, and they will grow in value, and for some of them in after years you would not take $100. Plant perennials that stay planted.

This state happens to be located at the busy end of the world when spring opens, and you want everything like yourself all ready for it. Your wife should have a procession of flowers to greet her every day from early spring till the hard frosts of autumn. Why don't women like the farm? Because it is so dreary and desolate. Fix it up as it ought to be! Make it an earthly Elysium, and you couldn't hire dogs enough to drive her away from it. You love fat cattle and swine, but you must remember that the pansy, the columbine and the rose are fully as handsome as the hog.

THE "SUDDEN SAWLOG."
A Norway poplar screen ten years old, planted 4 x 1½ ft., thirty-five feet high.

Beauty is wealth, and there are hundreds of dollars to be evolved from that patch of ground in front of the house. And there is the garden! Lay out an acre of ground in orderly form. Don't forget the asparagus bed. You can raise it readily as large as a hoe handle; you can use it twice a day for two months. I remember while a boy we all had to take our spring bitters—and how bitter they were! I can taste them yet. Asparagus served in cream is pleasanter to take and more effective as a guardian of health. Lay out your garden so you can cultivate with the horse as much as possible. Plant your fruit trees at

the sides and don't get more than you can care for. Don't forget the strawberries!

Now we come to the farm—and at the best how it has been neglected! These are not places which you never could plow, and you have been raising weeds there for thirty years when you should have been raising houses and barns. I show you here the possibilities of forestry. Here is the Norway poplar, or the "sudden sawlog"—the cutting came from Minnesota. It is about nine feet tall. Get a dozen from your nurseryman, and you have the nucleus of a mighty forest. Plant your waste places and have these trees dig gold out of your mud. Don't you know that there is a mighty timber famine at your very door? In your own state these trees have grown to be sawlogs in fifteen years. Here is the Thurlow weeping willow with stem straight as an arrow, and the branches droop like fountain sprays. I don't know how hardy it is here, we are going to try it. By the way, I am an old man, seventy-four. I tried my best to sell out the past summer. I didn't find a purchaser. So I doubled my plant and doubled my stock, and have put in a branch nursery in my old home at Paynesville, in this state, where we will soon have about 100,000 choice shrubs, plants and trees.

Now for evergreens. The tree for the semi-arid regions and for the great northwest is the Ponderosa, or bull pine. Trees from seeds gathered from Colorado foothills are not always hardy up here. Get seed from the highest points of the Black Hills and from the highest altitudes of the Rockies, and you are all right. We nurserymen have been at fault with this tree and treated it like other conifers. We have raised them under screens. This is wrong. Plant them in the open—they resent coddling. In the Black Hills I saw them growing near the railroad where the soil had been scraped to the hardpan. They never had any protection and were doing finely. The best time to plant is in the fall. Perhaps you can't get the seed then. In that case soak the seed in warm water till they sprout and cover with half an inch of earth and plant early. I used to be troubled with their damping off under the screen. I have no trouble out in the open. Don't let the ground dry while they are germinating. When they get up then they go down—look at these roots fourteen inches long. These are yearling plants. Let them grow in the open, and they are much more hardy, These were one year old when planted this spring. Look at them now—fine sturdy trees, and ready for business.

You farmers, you can raise these sturdy pines as easily as you please, and they will cost you cash out the price of the seed. Here is a Minnesota jack pine two years' growth five feet. How is that? This grew without any cultivation in a bank of stiff clay. You have a man up at Aitkin in your state who has two millions of fine seedlings which he could put down at your door for a little over one-half cent a piece. But I am afraid you

The bull pine.

are still going to live on a wind swept prairie and let him throw his trees on the brush pile. It's too bad! He sent those trees down to the United States Government Station in the Nebraska sand hills that are doing so wonderfully well. His name is H. B. Ayers. I don't suppose he is here. I don't care to advertise him, but I want to advertise you and let you know what

you have in your own borders. Just think with these two kinds of pines what you could do with your farms!

Lumber is getting high; so plant evergreen barns. Surround one-fourth of an acre with two rows of pines, and you will find your barn growing, putting on siding and shingles itself, and it will be far better than the shelter of a barbed wire fence we use down our way. Some of you have stony places or hilly portions on the farm that don't bring you in a cent. Plant these to pines. Have your evergreen barns, shelter hills and groves, and so move your grand state about 300 miles south and dodge the rigors of your awful winters. Have shelters everywhere, and you can raise many things you cannot now. And when Old Boreas comes along with that stinging lash of the north wind, he will be discouraged trying to find you.

Have a plenty of ornamental shrubs! Last summer in a Boston park I saw 150 kinds of lilacs growing. I am poor—I only keep fifty kinds—but they are marvelous in their forms and foliage, with a success of bloom reaching down to the first of July. You can propagate them if you know how. Get a good collection and go to raising them from seed. At Brandon, Manitoba, I saw a fine lilac hedge. I asked Mr. Bedford what kind they were. "Chas. the 10th." "But," said I, "they vary." "Yes," was the reply, "I raised them from seed." And he had some very fine ones of a new type. Visiting a nurseryman in Massachusetts last summer I noticed a fine lot of Villosa, June blooming lilacs. I asked the proprietor why they varied so much. "I raised them from seed," was the reply. Grown near the Bretschneider, the Emodi, and some other broad-leaved ones, all late bloomers, you are bound to get new kinds. I am experimenting along this line. Why, there is a wonderful field opening all around you. Why not enter in? You can propagate by grafting just as the nurseryman grafts his yearling apples. A piece of scion and piece of root, the lip graft and a waxed thread. You can graft 500 or 1,000 a day.

Did you know there were two distinct kinds of roots on the common lilac? Here are the laterals. How they sprout! I think they lay awake nights to sprout. You can graft on these, and they will keep on sprouting. They are soft and full of pith. The tap root system is hard and can't sprout. Graft on these, and you are all right. Or graft on the Persian and Rouen family —they do not sprout. The lilacs take readily on roots of the vulgaris or Persian.

There are two kinds of lilacs that are trees, the Japanese and Chinese. I know there was another, the Russian, or Amurensis. I have waited years for it. Last summer I found it in the Boston Arboretum and have the promise of it. These grow about as fast and as large as our natural ash. Glorious June blooms! Think of avenues of them! Last year I was invited to write for one of your leading agricultural papers. I prepared an elaborate article on the lilac. I supposed I could write so people would be interested. I wanted to show what they could do. But there was no room for it. It was crowded out by the hog and the steer. I have simply led you to the border of things; there is a wide world of beauty beyond.

The time will come—I shall not live to see it, you will—when the farm home shall be beautified and glorified as the finest spot on earth, held in delightful memory by the children who shall go out from it. A blessed retreat for the wearied wife in her declining years! A fair section of paradise let down to earth! The world is full of beauty from the fair tropics to the vast tundras of the north. God sowed flowers broadcast. And do you not know that the universe itself is built on the plan of a vast garden of delight? Here our vision is limited. Objects diminish in ratio to distance. When standing on the shores of light up there we come to our own, we shall pass under that arch on which is inscribed the eternal welcome: "All things are yours." Sometimes we have foreshadowings of the glory to be unveiled. I knew a little girl up in Stearns County who years ago died of diphtheria, and to her rapt vision came a scene of passing loveliness. She had never seen or heard much of flowers only as she had seen them growing wild, but she spoke in rapture and amazement of the fields which rose to her view. She died trying to tell her mother about the flowers she saw.

Some fourteen years ago I lay on the borders of death through the rheumatic fever. At one time I was near the border. One night I seemed in a land filled with the very astonishments of beauty. Rose bushes grew to trees, the size of the monarchs of Yosemite. Overhead broad avenues were arched with a mingling of colors indescribable. Flowers strangers to mortal eyes were unfolding their loveliness everywhere. In a fascination of delight I ran through these realms, and they seemed limitless. No pen could portray the glory of the scene. I was very sick and woke up completely exhausted with my travels in that land of delight. When God planned the universe, He built a vast flower garden. Each star shines with a beauty

all its own. One is a ruby, another an amethyst. There is an opal. Off in the distance is an emerald and beyond a sapphire. When the Great Horticulturist drove his plowshare through the field of azure, He strewed the furrows with stars which are like vast bouquets in the hand of the Infinite. Up there we shall see as God sees, with no diminution in ratio to distance, Orion of the Pleiades, with broad landscapes of marvelous loveliness. The distant Milky Way, which lies like a snowdrift far away, will roll up before us into limitless fields of beauty. The Southern Cross will be a floral cross, and every star an immortal. Vast abysses of glory flooded with the mingled effulgence which comes from myriads of suns will lie over all that immensity, and it will be beauty—beauty everywhere.

Such being our inheritance up there, would it not be a good plan to get in touch with the beautiful down here? Don't you know that you can gather tints from these sun mantles and from the rainbow and weave them into gardens of beauty down here, and brighten up this old, somber world of ours so it will be a prophecy of what lies before? Then peering out of the unseen are myriads of forms of surpassing loveliness human eye has not yet seen, and there they are patiently waiting for you to introduce them to the world.

The President: I think some of you who have listened to this admirable address might wish to question Mr. Harrison in regard to some of the points he has brought out of interest, and we will devote a few minutes to that purpose.

Mr. Henry Husser: I think the white poplar is a quick growing tree, but it should not be planted near wells or cisterns on account of growing suckers, and if they grow adjoining a field which you cultivate you will have trouble.

Mr. Harrison: There are two kinds, and this kind I have been describing will not sprout. This was introduced by Prof. Budd, it has a larger leaf than the other and does not sprout, or at least it does not sprout as readily. The root of the other will go into a well if it can. I have known the cottonwood to go two hundred feet and pump a stream dry.

Prof. Thos. Shaw: I would like to ask if the Ponderosa pine is a good timber tree, and how large does it grow under favorable conditions?

Mr. Harrison: I have had them forty to fifty feet high. It makes good lumber. It warps and twists some and is not quite as nice as white pine, but for finishing lumber it is very valuable indeed. You want to remember one thing that the president said in regard to this pine, you want to look out where you get your seed. I sent to Prof. Green from the foothills of Colorado, and it was not hardy here. You want to get it from a high alti-

tude. That from the Black Hills would be all right. It is the easiest thing in the world to raise. You can do it without any trouble. I have tried it year after year and with the best success.

Mr. Husser: Are they easily transplanted?

Mr. Harrison: You don't want to plant in very dry weather in hard ground. If the weather is damp and the ground is moist, you can plant. The way I do, the second year we dig a trench straight up and down. Dig it about six inches deep, put the roots in the earth, push the dirt back with the hand and firm it. You cannot get the roots in too solid. Let them grow there two years and then put them in your forest.

Mr. Husser: If the Ponderosa pine was planted on steep side hills it would be a great thing for our state.

Mr. Harrison: I planted Ponderosa pine that way. We have a park in York where I planted some of those young pines, and they are all right. You can get the most splendid result by planting the jack pine on side hills. If you have a north slope hill you can plant the jack pine, if a south slope you plant the Ponderosa. The Ponderosa will stand any amount of heat.

Prof. Shaw: The gentleman has raised an important and practical question. Would you recommend the jack pine and the Ponderosa under Minnesota conditions?

Mr. Harrison. I should try them if I could get the right kind of seed from the Black Hills. The Colorado foothill seeds do well with Mr. Norby in South Dakota, but they do not always prove satisfactory in this latitude. Plant them both. You can probably get them set down here for half a cent apiece. I know that I need not hesitate to give the name of the man growing them. His name is H. B. Ayres, of Aitkin, and he sells a great many of them. It is a pity to see all those that go to waste. They grow from a hundred to two hundred miles north. There are several kinds of jack pine. Newhall reports them as an evergreen shrub, but Prof. Green and others find they grow very thickly together and form a thick top. They grow the most rapidly of all the evergreens. I find they beat everything else of my eighteen kinds. In my evergreen book there is a picture showing them growing in the sand hills of Nebraska thirteen years old and twenty-two feet high. If you have a sandy position select a patch and plant it, and you will be doing good work, for you will be raising houses and barns.

THE CABBAGE INDUSTRY OF SOUTHEAST WISCONSIN.

W. J. MOYLE, UNION GROVE, WIS.

For the past ten or twelve years the growing of cabbages as a commercial crop in Racine and Kenosha counties, Wis., has been slowly but surely getting a foot-hold among the farmers of that locality. True, this crop has been grown in a small way in the vicinity of Racine for thirty years. B. R. Bones, of that city, was the pioneer grower. He found it a very profitable crop in the earlier days, when the only storehouse he had was a trench in which he pitted the cabbage in the field in the fall of the year, leaving them there till spring. Later, however, when it was found out that soil and climatic conditions there were ideal for the growing of this vegetable on a commercial scale, others began to grow the crop, and an outside market was found at good prices for all that could be grown. Thus this industry rapidly assumed a position of considerable importance.

The more prominent growers built their own storehouses and stored their crop for higher prices, often realizing handsomely on the same. One enterprising Irishman, buying for $5 a ton in the field and storing in the spring, sold the same crop for $40 a ton, cleaning up about $20,000 on the deal.

This set the growers all agog, and storage plants were built in rapid succession, until last season cabbage stored by the growers never paid for the extra handling.

It is within the last five years, however, that the most rapid strides have been made in growing this crop. Many a farmer during the past season planted a much larger acreage than he could take care of conveniently, and then with the bottom knocked out of the market he found it anything but a profitable crop.

The season of 1905 found the cabbage market firm and the growers realizing handsomely on the crop, a good share of the late crop selling at the car doors for $12 a ton, and with a yield of ten tons to the acre this gave a good profit.

The season of 1906 found the farmers all rushing into cabbage with the result that the acreage was increased about fourfold, and where a grower had been contented with from two to five acres he now planted from eight to fifteen acres. Any one could easily draw conclusions as to what the outcome would be. Thus, when the buyers came onto the market in August and September, they had no difficulty in getting all the cabbage they wanted at $3 a ton, a price that hardly paid for the cartage where the haul was of any distance.

At these prices the buyers found a ready outlet for the entire crop, the only and greatest difficulty being to procure cars in which to ship when needed. One morning in October, for example, in the village of Union Grove, 150 wagon loads were in line waiting to unload, with not a car within 50 miles.

The first cabbage to go on the market are what are known as "Domestic." These are grown for local trade and the saur kraut factories. This cabbage is of much finer quality than the later varieties and will yield almost twice as much to the acre, the largest record we have at present being twenty-four and two-thirds tons. This variety, however, is much more susceptible to rot and for this reason is avoided by many, but when a good demand is found for it, it is claimed that it is more profitable to grow than the later sorts.

Depot scene at Union Grove, Wis. in cabbage shipping season.

The variety most largely grown for storage is the Danish Stonehead. The best seed of this sort is grown on the island of Amagar, off the coast of Denmark. Importations are made direct from the seed-growers there and retailed to the growers here at $2.50 a pound.

As to soil and cultivation: The soils on which the best crops are grown are rich black loam or reclaimed peat marshes, and in every case highly fertilized with barnyard manure and commercial fertilizers. This entire section being a great dairy region, barnyard manure is available in large quantities, and the soil is naturally very rich. Twenty loads to the acre is considered a good coating for a crop. This should be applied in the fall and plowed down. In the

spring as soon as the weeds start this ground is gone over with a disk-harrow to destroy the weeds and level off the surface. This practice is continued every ten days or two weeks, until the time of planting, which is generally from the 15th of June to the 1st of July. By this time the final fitting of the soil should be well done, every vestige of weed life destroyed before setting the plants, as this will mean so much less labor afterwards in cultivation.

About 12,000 plants are set to the acre, the rows being three feet apart and the plants eighteen inches apart in the row. They are set with the cabbage planter, about three acres being considered a good day's work. If the land is not too weedy, with three cultivations and three hoeings you will be able to lay the crop by.

As to the future of this industry in this locality, it is safe to

Street scene at Union Grove, Wis., in cabbage shipping season.

say that the farmers will continue to grow a good acreage, but will not go in on as extensive a scale as they have the past season and thus will no doubt be able to realize better prices also for the crop.

One of the best features of this crop is the remarkable way in which foul weeds, such as quack-grass and Canada thistles, are entirely killed out of the soil where good cultivation is given. This is due largely to the fact that early and late cultivation gives these persistent weeds little chance to grow.

A rough estimate of this year's crop for our locality would be about 5,000 acres, with an average yield of ten tons to the acre, making a total of 50,000 tons, or, at 20 tons to the car, 2,500 carloads. This has net the grower on an average $5 a ton, or $250,000 for the entire crop.

What becomes of all this cabbage? might be asked. A large quantity goes into the hands of saur kraut manufacturers around Chicago, while large quantities are shipped south into Texas and other southern states, where it is impossible to grow this succulent vegetable.

Mr. C. C. Hunter: I would like to ask the name of the cabbage planter you spoke of.

Mr. Moyle: It is a machine made for the purpose, although it is similar to the one made to plant tobacco, and two boys sit behind and drop the plants. It is somewhat similar to a corn planter. There is a barrel filled with water fastened to the machine, and every time a plant is dropped a little water is passed out.

The President: I presume you prefer dry to wet weather for planting?

Mr. Moyle: Yes, it is a great deal better, the dirt does not stick to the wheel. If it is too dry, it is dusty so the boys and girls who drop the plants cannot see, and they sometimes get them in upside down. However, we want the soil in good condition and dry.

The President: How many thousand a day will that machine plant:

Mr. Moyle: 40,000 plants a day is considered a good planting.

Mr. E. A. Smith: Would that machine plant strawberry plants?

Mr. Moyle: Yes, they are using it for that purpose. But, of course, in the case of strawberry plants, they have such a large root system that they do not plant so readily as cabbage, and they cannot set so many plants a day, and they have to be careful to arrange the plants before setting them. They must be tied in bundles, and then there is no difficulty—and you even get a better stand than when planted by hand.

Mr. Seth Kenney: Are there cabbage worms enough to go around? (Laughter.)

Mr. Moyle: Yesterday there was some discussion regarding the poisoning of cabbage worms. There is no difficulty experienced in using poison, although most growers do not use it because they grow cabbage on such a large scale, yet the worms were very injurious this past season. It was a dry season, and it was generally estimated that the crop was cut down one-third on account of the worms. A great many use Paris green. The cabbage grows from the heart out and after the poison is put on there will be more than ten or a dozen leaves that come out so that the head proper is not affected by the poison.

The President: How do you apply it?

Mr. Moyle: We use those little spray guns which hold about a quart of water, and put in a teaspoonful of Paris green. It is an easy thing to handle and a man can walk right along between the rows and spray the plants.

The President: That does not fall off?

Mr. Moyle: No, it stays right on the leaves. I think you can get one of those guns for thirty-five cents. You can go over quite a large acreage.

Mr. Benjamin: Can cabbage be successfully pitted? I know a market gardener who pitted several tons, and he lost them all.

Mr. Moyle: It is not safe as a rule, and for that reason they use a storage house. Several growers have gone to work and pitted on a large scale, and sometimes the result was that all their cabbage rotted. Occasionally it goes through all right, and they realize handsomely, but as a rule it is not satisfactory to pit.

The President: The storage is on shelves.

Mr. Moyle: Yes, they put them on shelves.

Mr. Benjamin: Do you store them and market them later?

Mr. Moyle: They have two kinds, the green and the white head, and one is cut immediately and marketed. At the present time they are paying $8.50 for green and $7.50 for white. After they are stored the outside leaves wilt and dry up, but the inner side is left hard.

Mr. Kellogg: Is this machine they use for planting cabbage made especially for that purpose?

Mr. Moyle: It is made especially for cabbage.

Mr. Kellogg: Is it not almost the same thing as the strawberry planter?

Mr. Moyle: Well, no, it is somewhat different.

Mr. Kellogg: In using the tobacco planter for planting strawberries we found that the pressure was not sufficient to hold the strawberries in place, and we had to go along and set the plants in firmer. We have used them a good deal.

The President: Are you using them now, Mr. Kellogg?

Mr. Kellogg: No sir, we are using a spade.

Unused Portions of the Farm.—Nearly every farm has at least a few acres which are of little value for growing agricultural crops. This land should be set aside for a woodlot and devoted to the production of fuel, fence posts and timber for farm uses.

HORTICULTURE AT THE MINNESOTA STATE FAIR, 1907.

A. W. LATHAM, SECRETARY.

The general appearance of Horticultural Hall, not only at the opening of the fair at 9 o'clock a. m. Monday morning, Sept. 2, but at every moment thereafter until its close at the hour of eleven on the Saturday evening following, was almost all that could be desired,—thoroughly satisfactory to the management and the exhibitors, and as near as could be judged by the expressions of the visitors attending equally so to them. In one point only could there have been a radical improvement in it, and that was in the degree of ripeness of the fruit exhibited. The fair was held at least two weeks too early to secure fully grown and well colored specimens of the various kinds of fruits shown, so that necessarily much of it was very undersized and lacking the beautiful, bright color which belongs to mature fruit grown in this climate. This situation, however, was unavoidable. In one respect the season was peculiar, and favorably so for this exhibit, in that apples were more highly colored for their stage of maturity than is usual.

In the department of apples there were the same number of collections in the professional class as last year, though a change in the personel. In the amateur class there were eleven collections shown, two more than in 1906. The amateur collections aggregated 362 plates and the professional 233 plates.

There were no premiums offered on sweepstake collections this year, but in place of it premiums were offered for collections of twenty varieties, collections of fifteen varieties and collections of ten varieties. These new classes all proved to be very popular with the exhibitors, and there were eleven exhibited in the twenty variety class, twelve in the fifteen variety class and fifteen in the ten variety class.

The apple seedling exhibit was an especially fine one, Mr. T. E. Perkins, of Red Wing, as usual, carrying off the honors of the occasion with 121 varieties from his Malinda seedling orchard, all of them beautiful fruit and gotten up as a display in an almost perfect arrangement. Fifty varieties of seedlings were shown from the Lyman Wealthy seedling orchard and in smaller numbers from other orchards. A display of 92 varieties of seedlings were shown by Mr. Thos. E. Cashman, superintendent of the Owatonna orchard station, grown in that orchard. This fruit was very immature, however, and was only a forecast of

what may be expected from this orchard at the winter meeting of the horticultural society.

Including several classes not mentioned above, there were altogether on exhibition in the horticultural department 3,646 plates of apples, not including the fourteen pecks of Wealthy apples shown.

The display of grapes was of course nowhere up to the usual standard in appearance on account of the unripeness of the fruit. There were, however, shown in all of this class of fruit 415 plates, Mr. Gust Johnson of Excelsior, as usual, taking the first prize for a large and handsome collection. Five other exhibitors competed with him for collections of grapes, subdividing the

Horticultural Hall at the State Fair. From photo taken during last fair week.

$60 offered pro rata in this class rather more than desirable to the exhibitors.

Notwithstanding the unripeness of the plum crop there were 298 plates shown, many of them absolutely green, though they took on a little color as the fair progressed.

One plate of peaches from the garden of A. D. Leach, also a plate of quinces from the same person, and a plate of pears from J. A. Howard, made up the display of unusual fruits.

Besides the fruit as noted above, there was an unusual amount shown in the part of the hall occupied by the agricultural exhibits, and it is safe to say that at least 1,000 plates

of fruit were shown there. There being much more fruit throughout the state generally this year than any year heretofore made it possible to exhibit some fruit in all of the county exhibits.

The hall was decorated with evergreens in much the same manner as for some years past, no acceptable substitute for this beautiful form of decoration having been worked out. The Jewell Nursery Company made its usual most attractive exhibit in the center of the hall, which, with the exception of an exhibit in the northwest corner of the horticultural department by B. T. Hoyt, was the only nursery exhibit in our department this year. It would seem that among the enterprising nurseymen of our state there should be a number who would eagerly take advantage of this opportunity to meet their friends from all over the northwest.

The flower exhibit was much in excess of that of any previous Minnesota State Fair of which we have any recollection. Six new long tables were made and 600 additional jars purchased, all of which were in demand and more, so that one of the best exhibits, that by Dr. D. W. C. Ruff, of White Bear, had to go upon the floor in its entirety. Monday morning found every inch of space in the hall devoted to flowers covered, and the weather being favorable they scarcely deteriorated sufficiently so as to make way for the second exhibit by both amateurs and professionals which came on Thursday morning. A very full exhibit of flowers remained on exhibition in good condition till the close of the fair. Great pains was taken to keep this department fresh and clean, and to this end the exhibitors contributed generously. Special acknowledgement is due to Mrs. F. H. Gibbs, the secretary of the Minnesota Rose Society, for services rendered in connection with the exhibit of members of that society the last half of the week.

Four of the principal florists of the two cities furnished the decorative plants which occupied and adorned the wall space all around the horticultural part of the hall, except that occupied by Northrup, King & Company with a seed exhibit. These florists are Aug. S. Swanson, St. Paul; Minneapolis Floral Company, E. Nagel & Son and John Vasatka, of Minneapolis.

The judging was done this year by home talent altogether, most of the work being in the hands of Prof. Samuel B. Green, though many others contributed to the judging in a measure, as will be noted in the list of premiums following, to which the attention of the reader is also called in studying the details of the

exhibit. Thos. H. Hall and E. Nagel, both of Minneapolis, judged the flower department.

The usual number of visitors from abroad were with us, amongst whom the writer noted Secretary Wesley Greene, of the Iowa State Society, Mr. Reeves of Waverly, Ia., Chas. Patten of Charles City, Ia., and L. A. Clemons of Storm Lake, Ia.

Most of the exhibitors of this department were in attendance the larger part of the week, and it is the opportunity of meeting friends and brothers in this way that makes attendance at the state fair in a large sense so pleasant and profitable. Come and see how it is for yourself another year. If you have any fruit or flowers to exhibit bring them along; if not come anyway and fraternize with those whom you will meet there. More changes will undoubtedly be made in the premium list before another fair so as to strengthen the weak points of the present list and make the occasion a still more successful one.

Mr. Thos. Redpath, as for a number of years past, was in active charge of the work going on in the hall, and much credit is due him for the successful results attained. He was ably assisted by F J. Cowles, of West Concord, and a corps of efficient helpers, every one of whom did his or her work so well as to deserve special commendation.

This report would be entirely incomplete without speaking of our oldest member, Mr. Ditus Day, who spent the first four days of the fair with us, tenting on the grounds and enjoying in full a repetition of the experiences which he has repeated now for over a quarter of a century. Mr. Day is no longer an exhibitor, having sold his farm and orchard, but in his 94th year he carries himself with vigor and retains his old time interest in matters horticultural.

AWARDS ON FRUITS AND FLOWERS, MINNESOTA STATE FAIR, 1907.

APPLES.

(Open to all.)

Judge—Saml B. Green.

Peck of Wealthy Apples, $20 to be divided pro rata—

H. F. Busse, St. Anthony Park	$1.55
P. H. Perry, Excelsior	1.55
G. A. Anderson, Renville	1.55
A. A. Bost, Excelsior	1.35
Frank Morris, Lake Elmo	1.00
Gust Johnson, Excelsior	1.35
Thos. Redpath, Wayzata	1.55
H. H. Whitmore, Excelsior	1.35
J. A. Howard, Hammond	1.55
Robert Sodergren, Scandia	1.30
H. W. Shuman, Excelsior	1.55
F. I. Harris, La Crescent	1.55
Walter Yahnke, Winona	1.35

Collection of Twenty Varieties of Apples, $40 to be divided pro rata—

Walter Yahnke	$4.00
P. H. Perry	3.50
Mrs. A. D. Leach, Excelsior	4.00
John Bisbee, Madelia	4.00
Dewain Cook, Jeffers	3.50
Nils Anderson, Lake City	2.50
J. A. Howard, Hammond	3.50
Marion De Witt, Hammond	3.00
A. M. Mitchell, Hammond	3.25
W. L. Parker, Farmington	3.50
F. I. Harris, La Crescent	4.25

Collection of Fifteen Varieties, $35 to be divided pro rata—

Walter Yahnke	$3.25
H. F. Busse	1.75
P. H. Perry	3.00
W. J. Tingley, Withrow	1.50
Frank Morris,	3.00
J. W. Patten, Long Lake	3.00
John Bisbee	3.25
A. B. Lyman, Excelsior	3.25
A. M. Mitchell	3.00
J. A. Howard	2.25
F. I. Harris	3.25

Collection of Ten Varieties, $30 to be divided pro rata—

A. Wilwerding, Freeport	$1.00
Walter Yahnke	2.50
P. H. Perry	2.00
Mrs. S. R. Spates, Wayzata	1.45
R. C. Keel, Rochester	1.40
G. A. Anderson	2.00
A. A. Bost	1.45
Gust Johnson	2.00
John Bisbee	2.50
H. H. Pond, R. F. D., No. 3, Minneapolis	2.00
Dewain Cook	1.45
Nils Anderson, Lake City	2.50
J. A. Howard	1.45
T. E. Perkins, Red Wing	2.00
F. I. Harris	2.50
L. W. Crandall, Red Wing	1.75

APPLES (For Professionals).

Collection of Fifty nor less than Thirty Varieties (Hybrids and Crabs Excepted) $75 to be divided pro rata—

Walter A. Yahnke	$11.50
A. B. Lyman	12.50
D. Cook	10.00
J. A. Howard	13.00
W. L. Parker	13.00
F. I. Harris	15.00

	1st Prem.	2nd Prem.	3rd Prem.
F. I. Harris	$10.00		
J. A. Howard		$5.00	
Anisim—			
Thomas Redpath	1.00		
J. A. Howard		.75	
F. I. Harris			$0.50
Anis—			
J. A. Howard	1.00		
F. I. Harris		.75	
W. L. Parker			.50
Antonovka—			
Thomas Redpath	1.00		
A. B. Lyman		.75	
F. I. Harris			.50
Ben Davis—			
H. H. Pond	1.00		
A. Brackett, Excelsior		.75	
Walter Yahnke			.50
Brett—			
Thomas Redpath	1.00		
A. B. Lyman		.75	
B. P. Christenson, Hutchinson			.50
Borovinca—			
Gust Johnson	1.00		
Thomas Redpath		.75	
W. L. Parker			.50
Cross—			
W. L. Parker	1.00		
F. I. Harris		.75	
J. A. Howard			.50
Christmas—			
A. B. Lyman	1.00		
Fameuse—			
Walter Yahnke	1.00		
J. A. Howard		.75	
F. I. Harris			.50
Forsberg—			
F. I. Harris	1.00		
J. A. Howard		.75	
Walter Yahnke			.50
Gideon—			
G. A. Anderson	1.00		
J. A. Howard		.75	
A. B. Lyman			.50
Giant Swaar—			
F. I. Harris	1.00		
J. A. Howard		.75	
Walter Yahnke			.50
Gilbert—			
Walter Yahnke	1.00		
J. A. Howard		.75	
A. B. Lyman			.50
Golden Russet—			
F. I. Harris	1.00		
J. A. Howard		.75	
Walter Yahnke			.50
Grundy—			
J. A. Howard	1.00		
H. H. Pond		.75	
Walter Yahnke			.50
Haas—			
G. A. Anderson	1.00		
F. I. Harris		.75	
Walter Yahnke			.50
Hutchins—			
J. A. Howard	1.00		
Walter Yahnke		.75	
Iowa Beauty—			
W. L. Parker	1.00		
J. A. Howard		.75	
F. I. Harris			.50
Jewell's Winter—			
J. A. Howard	1.00		
Walter Yahnke		.75	
Thos. Redpath			.50
Judson—			
J. A. Howard	1.00		
Walter Yahnke		.75	
W. L. Parker			.50

Lord's "L"—			
Walter Yahnke	1.00		
F. I. Harris		.75	
Lowland Raspberry—			
A. B. Lyman	1.00		
W. L. Parker		.75	
Malinda—			
J. A. Howard	1.00		
Thos. Redpath		.75	
Walter Yahnke			.50
Newell's—			
Walter Yahnke	1.00		
J. A. Howard		.75	
Peach—			
J. A. Howard	1.00		
W. L. Parker		.75	
Plumb's Cider—			
W. L. Parker	1.00		
Walter Yahnke		.75	
Rollin's Prolific—			
J. A. Howard	1.00		
Walter Yahnke		.75	
Repke Malenka—			
Gust Johnson	1.00		
Thos. Redpath		.75	
H. F. Busse			.50
St. Lawrence—			
Walter Yahnke	1.00		
F. I. Harris		.75	
W. L. Parker			.50
Scott's Winter—			
F. I. Harris	1.00		
J. A. Howard		.75	
Walter Yahnke			.50
Sugar Loaf—			
Walter Yahnke	1.00		
F. I. Harris		.75	
J. A. Howard			.50
Superb—			
J. A. Howard	1.00		
Walter Yahnke		.75	
Tetofsky—			
W. L. Parker	1.00		
J. A. Howard		.75	
Walter Yahnke			.50
Utter—			
F. I. Harris	1.00		
A. B. Lyman		.75	
J. A. Howard			.50
University—			
F. I. Harris	1.00		
Thos. Redpath		.75	
A. B. Lyman			.50
White Pigeon—			
J. A. Howard	1.00		
Walbridge—			
Walter Yahnke	1.00		
J. A. Howard		.75	
F. I. Harris			.50
Yahnke—			
Walter Yahnke	1.00		
J. A. Howard		.75	
Yellow Sweet—			
A. B. Lyman	1.00		
Yellow Transparent—			
G. A. Anderson	1.00		
F. I. Harris		.75	
J. A. Howard			.50

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.	7th Prem.
Charlamoff—							
Jos. Taylor, Medford	$2.00						
A. B. Lyman		$1.75					
Thos. Redpath			$1.50				
W. L. Parker				$1.25			
H. H. Pond					$1.00		
J. A. Howard						$0.75	
Gust Johnson							$0.50

Duchess—						
Carl F. Steller, Exc'r..	2.00					
W. L. Parker.....		1.75				
W. A. Yahnke			1.50			
Gust Johnson				1.25		
J. A. Howard					1.00	
A. B. Lyman.....						.75
A. Brackett.....						.50
Hibernal—						
J. A. Howard.....	2.00					
F. I. Harris.....		1.75				
Walter Yahnke			1.50			
B. F. Christenson				1.25		
A. B. Lyman.....					1.00	
Fred Cowles, W. Conc'd						.75
Carl F. Steller.....						.50
Longfield—						
A. B. Lyman.....	2.00					
Gust Johnson		1.75				
D. F. Akin, Farmington			1.50			
F. I. Harris.....				1.25		
Walter Yahnke					1.00	
J. A. Howard						.75
McMahon—						
Thos. Redpath	2.00					
F. I. Harris		1.75				
Walter Yahnke			1.50			
J. A. Howard				1.25		
A. B. Lyman					1.00	
Gust Johnson						.75
Northwestern Greening—						
Carl F. Steller	2.00					
A. B. Lyman.....		1.75				
F. I. Harris			1.50			
B. P. Christenson				1.25		
Walter Yahnke					1.00	
J. A. Howard						.75
Okabena—						
Walter Yahnke	2.00					
J. A. Howard		1.75				
A. Brackett			1.50			
F. I. Harris				1.25		
B. P. Christenson					1.00	
H. F. Busse.....						.75
G. A. Anderson						.50
Patten's Greening—						
A. Brackett	2.00					
H. H. Pond		1.75				
Carl Steller			1.50			
J. A. Howard				1.25		
J. K. Bowers, Gladstone					1.00	
H. F. Busse.....						.75
F. I. Harris.....						.50
Peter—						
Thos. Redpath	2.00					
B. P. Christenson.....		1.75				
J. A. Howard			1.50			
Walter Yahnke				1.25		
Gust Johnson					1.00	
W. L. Parker						.75
Peerless—						
A. B. Lyman.....	2.00					
W. E. McNelly, Caled'a		1.75				
Gust Johnson			1.50			
Thos. Redpath				1.25		
W. L. Parker					1.00	
F. I. Harris.....						.75
J. A. Howard						.50
Wealthy—						
F. I. Harris	2.00					
J. A. Howard.....		1.75				
Gust Johnson			1.50			
C. F. Steller				1.25		
H. F. Busse					1.00	
G. A. Anderson					.75	
Wolf River—						.50
F. I. Harris	2.00					
J. A. Howard		1.75				
A. B. Lyman			1.50			
G. A. Anderson.....				1.25		
Walter Yahnke					1.00	
Carl F. Steller.....						.75
W. L. Parker						.50

APPLES.

(For amateurs.)

Judges—Dewain Cook, Chas. Haralson.

Collection of Forty and not less than Twenty Varieties, (Hybrid and Crabs excepted) $75 pro rata—

P. H. Perry	$6.10
A. D. Leach	7.40
W. J. Tingley	6.00
R. C. Keel	7.60
H. H. Whitmore	4.30
J. Bisbee	8.40
D. F. Akin	5.15
Nils Anderson	4.75
Marion De Witt	8.30
J. R. Cummins	8.30
A. M. Mitchell	8.70

	1st Prem.	2nd Prem.	3rd Prem.
A. M. Mitchell, Hammond		$5.00	
John Bisbee, Madelia	$10.00		
Judges—J. A. Howard, Le Roy Cady.			
Anis—			
A. M. Mitchell	1.00		
Anisim—			
F. F. Farrar, White Bear	1.00		
J. W. Patten, Long Lake		.75	
Antonovka—			
H. W. Shuman, Excelsior	1.00		
J. W. Patten		.75	
A. M. Mitchell			.50
Ben Davis—			
John Bisbee	1.00		
J. W. Patten		.75	
P. H. Perry			.50
Brett—			
W. J. Tingley, Withrow	1.00		
P. H. Perry		.75	
J. W. Patten			.50
Borovinca—			
Mrs. S. R. Spates, Wayzata	1.00		
F. F. Farrar		.75	
H. W. Shuman, Excelsior			.50
Cross—			
F. F. Farrar	1.00		
John Bisbee		.75	
R. C. Keel, Rochester			.50
Christmas—			
H. W. Shuman	1.00		
A. M. Mitchell		.75	
Fameuse—			
W. J. Tingley	1.00		
H. W. Shuman		.75	
A. M. Mitchell			.50
Forsberg—			
A. M. Mitchell	1.00		
H. W. Shuman		.75	
Marion De Witt			.50
Giant Swaar—			
J. W. Patten	1.00		
R. C. Keel		.75	
A. M. Mitchell			.50
Gideon—			
A. Wilwerding, Freeport	1.00		
Frank Morris, Lake Elmo		.75	
R. C. Keel			.50
Gilbert—			
F. F. Farrar	1.00		
R. C. Keel		.75	
W. W. Whitmore, Excelsior			.50
Golden Russet—			
Marion De Witt	1.00		
A. M. Mitchell		.75	
Grundy—			
A. M. Mitchell	1.00		
Marion De Witt		.75	
John Bisbee			.50
Haas—			
W. J. Tingley	1.00		
A. D. Leach, Excelsior		.75	
Nils Anderson, Lake City			.50

Hutchins—			
Marion De Witt	1.00		
H. W. Shuman		.75	
A. M. Mitchell			.50
Iowa Beauty—			
John Bisbee	1.00		
R. C. Keel		.75	
Marion De Witt			.50
Jewell's Winter—			
Mrs. S. R. Spates, Wayzata	1.00		
Nils Anderson		.75	
A. M. Mitchell			.50
Judson—			
A. M. Mitchell	1.00		
Marion De Witt		.75	
John Bisbee			.50
Lord's L.—			
A. M. Mitchell	1.00		
Marion De Witt		.75	
Frank Kennedy, Minnesota City			.50
Lowland Raspberry—			
R. C. Keel	1.00		
Malinda—			
D. F. Akin, Farmington	1.00		
Frank Morris, Lake Elmo		.75	
H. W. Shuman			.50
Newell's—			
Marion De Witt	1.00		
A. M. Mitchell		.75	
John Bisbee			.50
Peach—			
Marion De Witt	1.00		
R. C. Keel		.75	
Plumb's Cider—			
A. A. Bost, Excelsior	1.00		
John Bisbee		.75	
Nils Anderson			.50
Rollin's Prolific—			
Marion De Witt	1.00		
Nils Anderson		.75	
A. M. Mitchell			.50
Repka Malenka—			
H. W. Shuman	1.00		
Mrs. S. R. Spates		.75	
J. W. Patten			.50
Scott's Winter—			
Nils Anderson	1.00		
John Bisbee		.75	
P. H. Perry			.50
St. Lawrence—			
A. M. Mitchell	1.00		
Marion De Witt		.75	
Sugar Loaf—			
Frank Kennedy	1.00		
A. M. Mitchell		.75	
Superb—			
W. J. Tingley	1.00		
J. W. Patten		.75	
Tetofsky—			
R. C. Keel	1.00		
J. W. Patten		.75	
Marion De Witt			.50
Utter—			
A. M. Mitchell	1.00		
Marion De Witt		.75	
Nils Anderson			.50
University—			
H. H. Whitmore	1.00		
A. D. Leach		.75	
A. A. Bost			.50
White Pigeon—			
Marion De Witt	1.00		
A. M. Mitchell		.75	
Walbridge—			
A. M. Mitchell	1.00		
Marion De Witt		.75	
Nils Anderson			.50
Yahnke—			
Frank Kennedy	1.00		
A. M. Mitchell		.75	
R. C. Keel			.50

Yellow Sweet—							
W. J. Tingley					1.00		
R. C. Keel						.75	
Yellow Transparent—							
E. A. Farmer, Minneapolis					1.00		
P. H. Perry						.75	
A. M. Mitchell							.50
	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.	7th Prem.
Charlamoff—							
Mrs. S. P. Spates	$2.00						
A. A. Bost		$1.75					
H. H. Whitmore			$1.50				
Marion De Witt				$1.25			
A. M. Mitchell					$1.00		
W. J. Tingley						$0.75	
H. W. Shuman							$0.50
Duchess—							
W. J. Tingley	2.00						
Marion De Witt		1.75					
A. M. Mitchell			1.50				
H. H. Whitmore				1.25			
E. A. Farmer					1.00		
F. F. Farrar						.75	
H. W. Shuman							.50
Hibernal—							
F. F. Farrar	2.00						
Marion De Witt		1.75					
W. J. Tingley			1.50				
A. M. Mitchell				1.25			
Mrs. S. R. Spates					1.00		
Frank Morris						.75	
E. A. Farmer							.50
Longfield—							
H. H. Benjamin, Hutch.	2.00						
H. W. Shuman		1.75					
P. H. Perry			1.50				
Robt. Sodergren				1.25			
Marion De Witt					1.00		
A. M. Mitchell						.75	
Nils Anderson							.50
McMahon—							
H. H. Whitmore	2.00						
Marion De Witt		1.75					
————			1.50				
A. M. Mitchell				1.25			
Frank Morris					1.00		
J. O. Weld, Mound						.75	
Northwestern Greening—							
————	2.00						
Mrs. S. R. Spates		1.75					
A. D. Leach			1.50				
P. H. Perry				1.25			
A. M. Mitchell					1.00		
J. O. Weld						.75	
Frank Morris							.50
Okabena—							
F. F. Farrar	2.00						
J. O. Weld		1.75					
A. M. Mitchell			1.50				
P. H. Perry				1.25			
H. W. Shuman					1.00		
Nils Anderson						.75	
Patten's Greening—							
H. H. Whitmore	2.00						
————		1.75					
A. D. Leach			1.50				
W. J. Tingley				1.25			
Mrs. S. R. Spates					1.00		
A. M. Mitchell						.75	
H. W. Shuman							.50
Peerless—							
H. W. Shuman	2.00						
A. D. Leach		1.75					
Mrs. S. R. Spates			1.50				
Nils Anderson				1.25			
Frank Morris					1.00		
Marion De Witt						.75	
J. W. Patten							.50

Peter—						
A. M. Mitchell	2.00					
———		1.75				
Marion De Witt			1.50			
H. W. Shuman				1.25		
J. W. Patten					1.00	
———						.75
Mrs. S. R. Spates						.50
Wealthy—						
P. H. Perry	2.00					
H. H. Whitmore		1.75				
———			1.50			
H. W. Shuman				1.25		
A. M. Mitchell					1.00	
J. O. Weld						.75
H. H. S. Rowell, Exc'r.						.50
Wolf River—						
Frank Morris	2.00					
A. M. Mitchell		1.75				
Marion De Witt			1.50			
Nils Anderson				1.25		
———					1.00	
P. H. Perry						.75
A. D. Leach						.50

CRABS AND HYBRIDS.

(Open to all.)

Judges—Dewain Cook, Chas. Haralson.

Collection not less than six nor more than ten varieties.

$30 pro rata—	
A. Wilwerding	$1.78
W. A. Yahnke	2.10
P. H. Perry	2.02
A. D. Leach	2.00
Mrs. S. R. Spates	1.93
W. J. Tingley	1.99
R. C. Keel	1.86
G. A. Anderson	1.36
Gust Johnson	1.68
H. H. Whitmore	1.20
H. H. Pond	1.27
A. B. Lyman	2.10
D. F. Akin	1.78
Nils Anderson	1.89
H. V. Poore	1.47
F. I. Harris	1.68

	1st Prem.	2nd Prem.	3rd Prem.
Dartt—			
P. H. Perry	$1.00		
H. W. Shuman		$0.75	
J. A. Howard			$0.50
Early Strawberry—			
H. H. S. Rowell	1.00		
Thos. Redpath		.75	
G. A. Anderson			.50
Faribault—			
W. J. Tingley	1.00		
Frank Morris		.75	
A. D. Leach			.50
Florence—			
A. B. Lyman	1.00		
P. H. Perry		.75	
Carl F. Steller			.50
Gideon's No. 6—			
Thos. Redpath	1.00		
P. H. Perry		.75	
G. A. Anderson			.50
General Grant—			
J. A. Howard	1.00		
A. M. Mitchell		.75	
Hyslop—			
A. D. Leach	1.00		
Robert Sodergren		.75	
Rudolph Fischer, Merriam Park			.50
Lyman's Prolific—			
A. B. Lyman	1.00		
Robert Sodergren		.75	
H. H. Whitmore			.50

Martha—			
Walter Yahnke	1.00		
P. H. Perry		.75	
Gust Johnson			.50
Minnesota—			
H. F. Busse	1.00		
Frank Morris		.75	
A. Wilwerding			.50
Montreal Beauty—			
J. A. Howard	1.00		
Marion De Witt		.75	
A. M. Mitchell			.50
Meader's Winter—			
J. A. Howard	1.00		
A. M. Mitchell		.75	
Marion De Witt			.50
Orange—			
J. A. Howard	1.00		
A. M. Mitchell		.75	
Marion De Witt			.50
Picketts—			
J. A. Howard	1.00		
Marion De Witt		.75	
A. M. Mitchell			.50
Pride of Minneapolis—			
S. R. Spates	1.00		
P. H. Perry		.75	
Shields—			
H. F. Busse	1.00		
————		.75	
H. H. Whitmore			.50
Sweet Russet—			
J. V. Bailey, Newport	1.00		
P. H. Perry		.75	
————			.50
Tonka—			
Mrs. S. R. Spates	1.00		
J. A. Howard		.75	
A. M. Mitchell			.50
Transcendent—			
Carl F. Steller	1.00		
J. A. Howard		.75	
H. W. Shuman			.50
Virginia—			
S. R. Spates	1.00		
P. H. Perry		.75	
————			.50
Whitney—			
P. H. Perry	1.00		
Frank Morris		.75	
Carl F. Steller			.50

SEEDLING APPLES.

(Open to all.)

Judges—Saml. B. Green, Wyman Elliot.

Collection, excluding Crabs and Hybrids.

$50 pro rata—	
W. A. Yahnke	1.50
H. H. Pond	4.00
A. B. Lyman	7.00
D. F. Akin	5.00
Nils Anderson	2.50
J. A. Howard	2.50
J. R. Cummings	2.50
T. E. Perkins	25.00
Collection of Crabs and Hybrids, $15.00 pro rata.	
W. A. Yahnke	$2.00
H. H. Pond	4.00
A. B. Lyman	3.00
D. F. Akin	1.75
J. A. Howard	1.75
T. E. Perkins	3.50

Summer variety, kept in cold storage—

	Prem. 1st	Prem. 2nd	Prem. 3rd	Prem. 4th
A. B. Lyman	$6.00			
T. E. Perkins		$4.00		
A. B. Lyman			$2.00	
T. E. Perkins				1.00

Fall variety not sweet—never having received a premium at Minnesota state fair—

A. B. Lyman	6.00			
Thos. Redpath		4.00		
J. A. Howard			2.00	
T. E. Perkins				1.00

Fall variety, not sweet—
Open to all—

A. B. Lyman	6.00			
T. E. Perkins		4.00		
T. E. Perkins			2.00	
Thos. Redpath				1.00

Winter variety, not sweet—never having received premium at Minnesota State Fair—

H. H. Pond	10.00			
W. E. McNelly		8.00		
A. B. Lyman			4.00	
A. B. Lyman				2.00

Winter variety, not sweet—
Open to all—

Nils Anderson	10.00			
A. B. Lyman		8.00		
———			4.00	
Mrs. M. A. Knowles, Excelsior				2.00

Sweet variety, never having received a premium at the Minnesota State Fair and of such excellent quality as to make it worthy of cultivation; either fall or winter.

H. H. Pond	6.00		
D. F. Akin		4.00	
T. E. Perkins			2.00

PLUMS.

Judge—Wyman Elliot.
Collection, ten varieties—
$20.00 pro rata.

D. Cook	$7.25
J. A. Howard	6.75
A. M. Mitchell	6.00

Collection not to exceed 15 varieties.
$30.00 pro rata.

D. Cook	$8.45
Gust Johnson	7.95
J. A. Howard	7.30
A. M. Mitchell	6.30

	Prem. 1st	Prem. 2nd	Prem. 3rd
Aitkin—			
J. A. Howard	$1.00		
Hamlin V. Poore, Bird Island		.75	
Cheney—			
J. A. Howard	1.00		
Gust Johnson		.75	
A. M. Mitchell			.50
De Soto—			
J. V. Bailey	1.00		
Gust Johnson		.75	
Nils Anderson			.50
Forest Garden—			
Nils Anderson	1.00		
J. A. Howard		.75	
Hamlin V. Poore, Bird Island			.50
Hawkeye—			
J. A. Howard	1.00		
Dewain Cook		.75	
A. M. Mitchell			.50
New Ulm—			
Gust Johnson	1.00		
J. V. Bailey		.75	
Hamlin V. Poore			.50
Ocheeda—			
Dewain Cook	1.00		
J. A. Howard		.75	

Odegard—			
Dewain Cook	1.00		
Rockford—			
Gust Johnson	1.00		
J. A. Howard		.75	
Hamlin V. Poore			.50
Rollingstone—			
Gust Johnson	1.00		
J. A. Howard		.75	
A. M. Mitchell			.50
Stoddard—			
A. M. Mitchell	1.00		
J. A. Howard		.75	
Gust. Johnson			.50
Surprise—			
Gust Johnson	1.00		
Weaver—			
Hamlin V. Poore	1.00		
J. A. Howard		.75	
A. M. Mitchell			.50
Wolf, Freestone—			
Nils Anderson	1.00		
Gust Johnson		.75	
Dewain Cook			.50
Wolf, Clingstone—			
Hamlin V. Poore		.75	
J. A. Howard			.50
Wyant—			
J. A. Howard	1.00		
Gust Johnson		.75	
A. Wilwerding			.50
Seedling Plums—One-Half Peck—			
Dewain Cook	6.15		
Thos. Redpath		5.00	
H. V. Poore			3.85
Plate of Seedling Plums—			
Dewain Cook	5.00		
Mrs. S. Bedney, Gladstone		4.00	
A. M. Mitchell			3.00

GRAPES.

Judge—A. Brackett.

Collection—
$60.00 pro rata.—

P. H. Perry	$6.50
Isabella Barton	7.80
A. A. Bost	10.40
Gust Johnson	26.00
F. I. Harris	5.20
A. Wilwerding	4.10

	1st Prem.	2nd Prem.	3rd Prem.
Agawam (Rogers No. 15)			
Gust Johnson	$1.50		
A. A. Bost		1.00	
Mrs. Isabella Barton, Excelsior			.50
Aminia (Rogers No. 39)—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
Beta—			
A. A. Bost	1.50		
F. F. Farrar		1.00	
A. Wilwerding			.50
Brighton—			
Gust Johnson	1.50		
F. F. Farrar		1.00	
Mrs. Isabella Barton			.50
Concord—			
Gust Johnson	1.50		
A. D. Leach		1.00	
Aug. Giesman, Merriam Park			.50
Cottage—			
Gust Johnson	1.50		
A. A. Bost		1.00	
F. I. Harris			.50
Campbell's Early—			
Mrs. D. W. C. Ruff	1.50		
F. I. Harris		1.00	
Gust Johnson			.50

Delaware—			
A. D. Leach	1.50		
Gust Johnson		1.00	
Mrs. D. W. C. Ruff			.50
Duchess—			
Gust Johnson	1.50		
Early Victor—			
F. I. Harris	1.50		
Mrs. Isabella Barton		1.00	
Gust Johnson			.50
Eldorado—			
Mrs. Isabella Barton	1.50		
Gust Johnson		1.00	
Empire State—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Green Mountain—			
P. H. Perry	1.50		
A. A. Bost		1.00	
Herbert (Rogers No. 44)—			
Gust Johnson	1.50		
F. F. Farrar		1.00	
Iona—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Janesville—			
P. H. Perry	1.50		
A. A. Bost		1.00	
F. I. Harris			.50
Lindley (Rogers No. 9)—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Lady—			
Gust Johnson	1.50		
F. I. Harris		1.00	
A. A. Bost			.50
Martha—			
Gust Johnson	1.50		
A. A. Bost		1.00	
F. I. Harris			.50
Massasoit (Rogers No. 3)—			
Gust Johnson	1.50		
F. I. Harris		1.00	
A. A. Bost			.50
Moore's Diamond—			
Gust Johnson	1.50		
F. I. Harris		1.00	
A. A. Bost			.50
Moore's Early—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
F. I. Harris			.50
Niagara—			
A. A. Bost	1.50		
F. I. Harris		1.00	
Mrs. Isabella Barton			.50
Pocklington—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
F. I. Harris			.50
Pokeepsie Red—			
Mrs. Isabella Barton	1.50		
Gust Johnson		1.00	
Telegraph—			
Gust Johnson	1.50		
F. F. Farrar		1.00	
Mrs. Isabella Barton			.50
Wilder (Rogers No. 4)—			
Gust Johnson	1.50		
P. H. Perry		1.00	
Woodruff Red—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
F. I. Harris			.50
Worden—			
Gust Johnson	1.50		
F. I. Harris		1.00	
A. A. Bost			.50
Wyoming Red—			
Gust Johnson	1.50		
F. I. Harris		1.00	
Mrs. Isabella Barton			.50
Seedling Grape—			
A. Wilwerding	4.00		

PLANTS AND FLOWERS

Judge—Thos. H. Hall.

PLANTS.

(For Professionals.)

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Collection of Decorative Plants—				
Aug. S. Swanson, St. Paul	$35.00			
E. Nagel & Son, Minneapolis		30.00		
Minneapolis Floral Co., Minneapolis			20.00	
John Vasatka, Minneapolis				15.00
Collection of Foliage and Greenhouse Plants—				
E. Nagel & Son	20.00			
Minneapolis Floral Co.		15.00		
John Vasatka			10.00	
Collection of Five Hanging Baskets—				
E. Nagel & Son	6.00			
Minneapolis Floral Co.		4.00		
John Vasatka			3.00	
Collection of Coleus Grown in Pots—				
E. Nagel & Son	2.00			
John Vasatka		1.00		
Group of Palms in Pot—				
Aug. S. Swanson	4.00			
E. Nagel & Son		3.00		
Minneapolis Floral Co.			2.00	
Single Specimen of Palm, one in Pot—				
E. Nagel & Son	4.00			
Minneapolis Floral Co.		3.00		
John Vasatka			2.00	
Single Specimen of Fern, one in Pot—				
Minneapolis Floral Co.	4.00			
John Vasatka		3.00		
Aug. S. Swanson			2.00	
E. Nagel & Son				1.00
Collection of Carnations in Bloom, Grown in Pots—				
E. Nagel & Son	3.00			
Vase Filled with Plants—				
E. Nagel & Son	5.00			
John Vasatka		4.00		
Minneapolis Floral Co.			3.00	

CUT FLOWERS.

(For Professionals.)

Judge—Thos H. Hall.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Collection of Cut Flowers, not Less than Fifteen Varieties—				
Aug. S. Swanson	$25.00			
Minneapolis Floral Co.		$15.00		
E. Nagel & Son			$10.00	
Collection of Dahlias—				
F. F. Farrar, White Bear	4.00			
John Vasatka		2.50		
Collection of Sweet Peas—				
Aug. S. Swanson	4.00			
F. F. Farrar		2.50		
E. Nagel & Son			1.50	
John Vasatka				1.00
Collection of Asters—				
F. F. Farrar	4.00			
E. Nagel & Son		2.50		
John Vasatka			1.50	
Collection of Carnations—				
Minneapolis Floral Co.	4.00			
E. Nagel & Son		2.50		
John Vasatka			1.50	
Collection of Roses—				
Minneapolis Floral Co.	4.00			
E. Nagel & Son		2.50		
Collection of Gladioli—				
F. F. Farrar	4.00			
Geo. A. Kerston, Minneapolis		2.50		
E. Nagel & Son			1.50	
John Vasatka				1.00

DESIGNS, BASKETS AND BOUQUETS.

Table Decorations—				
Aug. Swanson	35.00			
Minneapolis Floral Co.		30.00		
John Vasatka			25.00	
R. A. Latham, Minneapolis				20.00
Twelve Inch Basket of Flowers—				
Minneapolis Floral Co.	5.00			
R. A. Latham		3.00		
E. Nagel & Son			2.00	
John Vasatka				1.00
Table Bouquet—				
Minneapolis Floral Co.	5.00			
John Vasatka		3.00		
Hand Bouquet—				
Minneapolis Floral Co.	3.00			
John Vasatka		2.00		
Bridal Bouquet—				
Minneapolis Floral Co.	3.00			
R. A. Latham		2.00		
John Vasatka			1.00	
E. Nagel & Son				.50

CUT FLOWERS.

(For Amatuers.)

Judge—E. Nagel, Minneapolis, Minn.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Collection of Asters—				
Mrs. F. H. Gibbs, St. Anthony Park	$4.00			
D. W. C. Ruff, 732 Globe Bldg., St. Paul		$2.50		
E. A. Farmer, R. F. D. No. 2 Minneapolis			$1.50	
Joe Hermann, W. St. Paul, R. F. D. No. 1				$1.00
Collection of Dahlias—				
D. W. C. Ruff, 732 Globe Bldg., St. Paul	4.00			
E. A. Farmer, Minneapolis, R. F. D. No. 2		2.50		
Mrs. S. R. Spates, Wayzata			1.50	
Chas. Krause, Rosetown, Box 41				1.00
Collection Gladioli—				
D. W. C. Ruff, Globe Bldg., St. Paul	4.00			
Frank Morris, Lake Elmo		2.50		
E. W. Becker, Excelsior			1.50	
Mrs. S. R. Spates				1.00
Collection Nasturtiums—				
Walter D. Smith, 209 Marshall Ave., St. Paul	4.00			
———		2.50		
Mrs. F. H. Gibbs			1.50	
Mrs. S. R. Spates				1.00
Collection Marguerite Carnations—				
Mrs. F. H. Gibbs	4.00			
Mrs. D. Gantzer, Merriam Park		2.50		
E. W. Becker, Excelsior			1.50	
Chas. Krause				1.00
Collection of Pansies—				
J. M. Sharff, 1413 Albany St., St. Paul	4.00			
S. M. C. Brown, St. Paul		2.50		
Mrs. D. Gantzer, Merriam Park			1.50	
Hattie Losey, 5100 Cedar Ave., Minneapolis				1.00
Collection of Zinnias—				
Mrs. Agnes C. Farrar, White Bear	4.00			
Chas. Krause		2.50		
C. P. Jurisch, Hastings, Minn			1.50	
S. M. C. Brown, 774 Ashland Ave., St. Paul				1.00
Collection of Perennial Phlox—				
D. W. C. Ruff	4.00			
E W. Becker		2.50		
Mrs. S. R. Spates			1.50	
Mrs. F. H. Gibbs				1.00
Collection of Sweet Peas—				
Blanche Hagler, 2824 Irving Ave. S., Mpls	4.00			
Mrs. F. H. Gibbs		2.50		
Mrs. E. W. Wilcox, White Bear Lake			1.50	
Collection of Snapdragons—				
E. W. Becker	4.00			
D. W. C. Ruff		2.50		
Mrs. F. H. Gibbs			1.50	
S. M. C. Brown				1.00

Collection of Perennials, not less than Ten Varieties—				
D. W. C. Ruff	10.00			
Mrs. F. H. Gibbs		8.00		
E. A. Farmer			6.00	
Chas. Krause				4.00
Collection of Annuals, not less than Fifteen Varieties—				
Chas. Krause	10.00			
Mrs. F. H. Gibbs		8.00		
Mrs. Ed. Doble, 1385 Raymond Ave., St. Anthony Park			6.00	

BOUQUETS OF CUT FLOWERS.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Judge—E. Nagel.				
Bouquet of Asters—				
F. F. Farrar, White Bear	$3.00			
Mrs. F. H. Gibbs, St. Anthony Park		$2.50		
Mrs. D. W. C. Ruff, Globe Bldg., St. Paul			$1.50	
Miss Anna E. Ripple, 409 Marshall Av., St. Paul				$1.00
Bouquet of Dahlias—				
Mrs. D. W. C. Ruff	3.00			
E. A. Farmer, R. F. D. No. 2, Minneapolis		2.50		
F. F. Farrar			1.50	
Mrs. F. H. Gibbs				1.00
Bouquet of Gladioli—				
Mrs. D. W. C. Ruff	3.00			
Mrs. E. W. Wilcox		2.50		
Mrs. F. H. Gibbs			1.50	
E. A. Farmer				1.00
Bouquet of Sweet Peas—				
F. F. Farrar	3.00			
Mrs. E. W. Wilcox		2.50		
Mrs. D. W. C. Ruff			1.50	
Mrs. F. H. Gibbs				1.00
Bouquet of Snapdragons—				
Mrs. F. H. Gibbs	3.00			
Mrs. D. W. C. Ruff		2.50		
Bouquets of Perennials—				
Mrs. F. H. Gibbs	3.00			
B. T. Hoyt		2.50		
Mrs. D. W. C. Ruff			1.50	
Bouquet of Annuals—				
Mrs. F. H. Gibbs	3.00			
Mrs. D. W. C. Ruff		2.50		
Bouquet of Roses—				
Mrs. D. W. C. Ruff	3.00			
Mrs. F. H. Gibbs		2.50		
B. T. Hoyt			1.50	
Mrs. E. W. Wilcox				1.00

Secretary's Corner.

PREMIUMS AT THE STATE FAIR.—The list of premiums printed herein awarded at the state fair is as it came to me from the office there, with some corrections that I was able to make over the telephone. It will be seen that it is incomplete in that there are a few names of exhibitors left out; otherwise I believe, it will be found correct. Some of the exhibitors will evidently receive more premium money than appears on this list on account of the omissions.

HAVE YOU RETURNED THE SUPPLEMENT? This refers to the supplement sent out with the August number containing a list of questions which we desire to have answered by the members for the sake of collating the information needed that these would supply. Many have already returned this supplement, but some have not, and especially some from whom the secretary is particularly desirous of hearing. Please take this matter up at once. It will only be a few moments' work for you, and in the aggregate these supplements will be of great value to the work of the society- This means *you !*

JAPAN WALNUTS IN MINN.—Two years ago I bought a few seedlings, six each, of varieties catalogued as "Sieboldii" and "Max Cordiformis', which I planted in my garden here at Northfield, Minn. They have thus far appeared perfectly hardy, having stood the last two winters without injury and made very good growth. I have given them no other protection than two or three thicknesses of newspaper wrapped and tied around the stem. Nils Flaten.

PROGRAM FOR THE ANNUAL MEETING.—This program is now in preparation, and suggestions from any of the members as to what they would like to have incorporated therein are in demand. This does not carry with it the promise that all suggestions can be carried out. The space and time allotted for various topics would of course make this impossible, but an effort will be made to get out of it in a general way what the membership wish and desire to secure. The Woman's Auxiliary, Forestry Association, the Rose Society, Plant Breeders' Auxiliary, the nurserymen, and other interests wfll all be duly recognized in what we expect to be the most interesting and practical program ever offered at our annual meeting.

ENTRIES OF FRUIT FOR WINTER EXHIBIT.—The prospective exhibitors at the annual meeting will accomodate the secretary exceedingly, and make it possible to be more accurate in results, by sending at an early date full entries of all the varieties of fruit that they expect to exhibit at the meeting. This is more important than it seems to be. There are so many entries and so many varieties shown at our meeting, that a lack of trained clerical assistance to do the work nccessary connected with making the entries and assigning the awards causes delay and an overpressure of work at a time when other things should have fuller attention. Please make all entries early.

AN EXTENSIVE SEEDLING ORCHARD.—Mr. John Bisbee, of Madelia, is operating an experiment orchard of his own on a very large scale. Besides a large number of varieties reasonably hardy in Minnesota, he has top-worked

many late keeping sorts that are not ordinarily considered hardy here that are doing well with him and fruiting. The way these are arranged in his orchard, very much of his fruit is crossed with other varieties, giving him an opportunity to secure seed from which to grow seedlings that should vary from the parent tree. Mr. Bisbee has growing in his orchard some 2500 seedling apple trees. He is greatly interested in the movement to secure new varieties adapted to our climate and already has many valuable sorts to show as a result of his labor, we understand. Mr. Dewain Cook, as a member of the seedling committee, visited his place recently and will make a full report in regard to it at the coming winter meeting.

Premiums on Winter Seedling Apples.—Last year $115 was offered on seedling apples, $40 on early winter seedlings and $75 on late winter seedlings, to be divided pro rata among all the varieties exhibited that had commercial value. At least this amount will be offered for a similar purpose this year. The fact that a seedling has already been exhibited does not in this case bar it from further competition. We desire to see at this meeting as many as possible of the good seedlings of the state that there may be comparison. If this is continued year by year a process of elimination will gradually bring out the best of the seedlings, and it is to this end that the society is moving in its annual fruit exhibits. Please plan to bring or send to the meeting every good seedling apple you have that will keep till that time. The class referred to would not be winter seedlings if it was necessary to keep them in cold storage.

If any one having a good winter seedling is unable to attend the meeting the fruit may be sent by express prepaid to the secretary so as to reach him on the day preceding the opening of the meeting, and if proper information is furnished entry will be made and the exhibitor's interest properly cared for. Please correspond with the secretary in regard to any such seedling to be sent.

Fruits for Winter Meeting.—Are you saving fruit for the usual exhibit at the annual winter meeting of the society? Arrangements have been made with A. Booth & Company, the cold storage house in Minneapolis, to take care in cold storage of any kinds of fruit that cannot be kept in one's own cellar until the time of the annual meeting. Of course if it can be kept at home, that is better than to send it to cold storage, though there is one advantage in doing this, especially if you are exhibiting in any large quantity. It can be sent to cold storage as soon as gathered, and it will be kept there without expense and delivered at the place of the meeting on the afternoon of the day before the meeting begins: that is, on the afternoon of Dec. 2nd. Fruit for exhibit purposes should not be gathered till fully colored. Many orchardists are gathering their fruit early for various reasons, but especially for exhibiting it should be allowed to attain full size and color; then as each apple is gathered wrap it at once in paper, and a second wrapping is also advisable. Select only the best specimens and don't send anything to the meeting that is not first class, leaving the spotted and misshapen apples at home. That kind of fruit is an injury to the exhibit and does not in any way help the exhibitor. Send or bring what you can, if no more than one plate. Each attendant at the meeting, if an apple grower, should contribute something towards the general display.

A WEEPING ELM.

This tree is growing on the lawn of Mrs. Mary V. W. Turrell, Longmont, Col. The tree is about thirty-five feet high, with pendulous branches hanging near the trunk, ten to twelve feet long, and large, brilliant dark-green leaves. A very beautiful tree. I came across it in my travels this summer and secured this picture.—Sec'y.

THE MINNESOTA
HORTICULTURIST.

VOL. 35. NOVEMBER, 1907. No. 11.

GROWING HARDY ORNAMENTAL TREES AND SHRUBS

E. M. SHERMAN, CHARLES CITY, IOWA.

The growing of hardy trees and shrubs is a subject in which I am deeply interested, and I want to say right here that we must look to our native trees and shrubs for the things which are to do us the most good. We as nurserymen and horticulturists search the world for things of beauty and usefulness to ornament and improve our homes, and many times we neglect in our own back yards things that are more valuable.

Now, taking the native ornamental trees, we have a long list that possess great value. Among our deciduous trees we have the linden, or basswood. It is a tree that to me is of great interest. When planted alone it makes a strong, upright tree with very dense foliage. The leaf stalks are of different color from the leaves, and the flowers and fruit it bears are very interesting. The tree when in bloom is a thing that is a delight to the whole neighborhood.

Our white elm, much more generally planted, I think can hardly be surpassed as a street tree; the red elm is seldom planted, and the cork bark, or rock, elm still less frequently, but I think both of these trees are worthy of attention. In some cases they exceed in value the white elm. The red elm is larger in foliage, and the bud is quite distinct. The cork bark elm grows with a round top, and the foliage is very dense.

In some sections of the state the shellbark hickory grows very well, and where it does thrive I think it is a most beautiful tree. The opening of the buds on the shellbark hickory is something which once seen will never be forgotten. The buds are very large, and the bud scales when they break open have the effect of a large flower. In most cases they are yellow, a yellowish brown shaded with green, but their color is variable, and we frequently find them in shades of rose and red. It is something which should be more widely planted, but it will only stand in the southeastern part of your state.

The bitter hickory has a wide range of hardiness in this state and is equally worthy of cultivation.

The hackberry is another tree which should be more generally planted. Then we have the birches and the willows, which in their place are worthy of attention. Among the smaller trees we have the ironwood, and some of them are very beautiful indeed. The thorn tree makes a low top with dense foliage and seldom grows to a height exceeding fifteen feet. We often find the top of great diameter in comparison with the height of the tree, and the foliage is very dense. I think the various forms of this tree are of great interest.

Then there is another class of trees we seldom see planted, and that is the oak. There are several varieties of the oak that do well with us, and I think are deserving of more attention than we give them. There is the white oak, the red oak, the pin and scarlet oak, all of which are perfectly hardy with us. We have a specimen of the burr oak in our nursery three years old, once transplanted, which is five feet high. We have the red, scarlet and pin oak that have made a growth of seven feet with one transplanting in three years.

The sugar maple forms a dense top thickly covered with leaves, which are of a glossy, deep green. It is one of the best street trees in northern Iowa. The red maple will thrive also in Minnesota, and the silver maple will thrive in the greater portion of your state. The black walnut and the butternut will also thrive in some sections of your state.

There is one tree that is being grown to a certain extent among nurserymen which I think deserves wider attention than it receives. It is perhaps not so valuable an ornamental as a forest tree, and that is the wild black cherry. Black cherry lumber is worth $250.00 a thousand, and it can be grown as readily as the maple. This is a tree that is native throughout the larger portion of Minnesota. The Kentucky coffee tree is a peculiar thing, and the tree is of a very interesting habit. The shape of the Kentucky coffee tree is of the general shape of the black walnut, and it is a tree that should have more attention than it now receives.

There is another tree which we seldom see planted about our homes, and that is the wild crab apple. It is so common that I suppose everybody despises it, but in the prairie sections of our state it seems to me that the wild crab apple should be of special interest. I do not think there is any trouble in trans-

planting the wild crab. By the wild crab, I mean our wild native crab with its green fruit, which we all refuse to eat.

The wild crab apple is also suitable for grafting on the ordinary apple root, and while it does not take well to the common seedling apple root, you can succeed with it on that stock. It can also be grown from seed or grafted on its own roots.

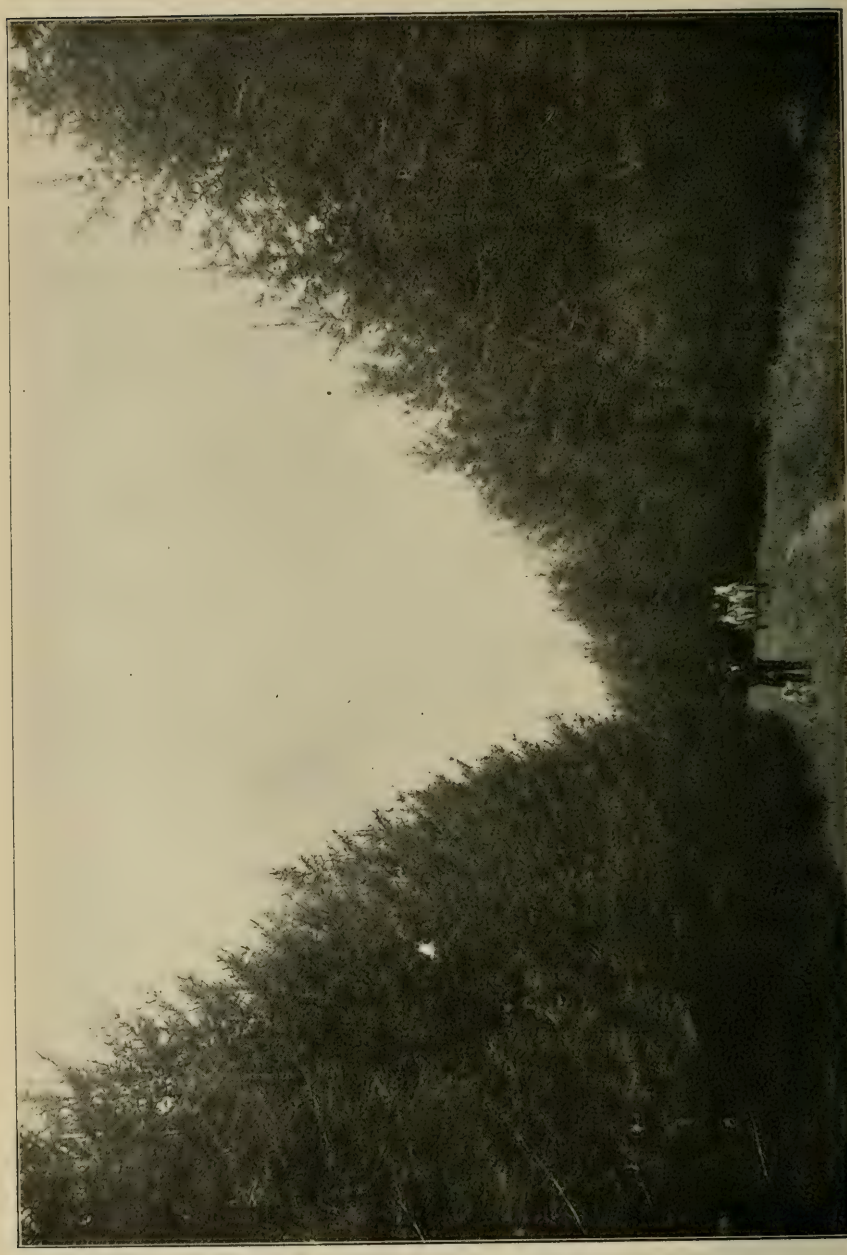
We have a few evergreens in this state that I think deserve more attention than they receive. The white pine is very suitable for transplanting and makes a beautiful tree. The white spruce is also a fine tree and one that will thrive over the entire state; the white pine will not do this. In southwestern Minnesota the white pine does not prove hardy. It does not take to a dry climate. I consider it of little value west of Mason City, Iowa, except in sheltered spots.

Then there are the arbor vitae and red cedar, they also have a place in hedges.

Among native shrubs we have the bladdernut, the prickly ash, the smooth bark and staghorn sumach. If these two sumachs can be planted together they will produce a very desirable combination. The staghorn grows to a small tree, while the dwarf sumach is a low growing shrub. The staghorn differs from the dwarf by the twigs being covered with a mossy substance like that found on the moss rose. It does not sucker badly, although it does to some extent, but not so much as the smooth bark. They are both worthy of receiving more attention than they now have.

Another shrub which should receive more attention from nurserymen is the high bush cranberry. I speak of this not so much on account of its fruit as because of its ornamental value. The fruit on the high bush cranberry is of a bright red and remains on the bush until spring, and when a bush is covered with the fruit it is a beautiful sight and makes a beautiful ornament for any home.

Among the hardy ornamental trees not native of this state that are worthy of planting are the European mountain ash, the weeping mountain ash, cut leaved birch and catalpa speciosa. We can also grow in the southern part of the state the water ash, or hop tree. This is scarcely more than a shrub. It is a native of this country and grows perhaps fifteen feet high, with very deep green, glossy, three lobed leaves. The fruit has a light wing which extends entirely around the seed, which has a strong hop odor. It is a very pretty shrub in some places.



Avenue of American White Spruce in Northern Iowa.

The European larch is a very much neglected timber tree. On our old farm in Chickasaw county, Iowa, one of the first tasks I was set to, as a small boy, was to plant a grove of European larch. A few years ago we had occasion to frame a barn and used some of these trees as timbers for the barn, and they squared six inches thirty-two feet from the ground. Those trees had been standing probably thirty-five years. It is a rapid growing tree, and the reason it has not been more largely disseminated throughout southern Minnesota is due to the fact that it starts very early in the spring and is very difficult to handle after it is once started. It should be handled in the fall or early in the spring.

Among the hardy shrubs we have the white and purple fringe, the golden chain, the weigelias, the viburnums and the various forms of the syringa, or lilac. Of the lilacs we have an endless variety. Among some of the better ones are the Japonica, the Persian, the Vilosa and the tree lilac. Of course we all have the snowball, which are always very attractive. Another shrub that is attracting some attention is the English buckthorn. They can be readily propagated from seed, which is also true of many of our trees, such as the basswood, the elms, the oaks, the hackberry, the maples, black walnut and butternut. The barberry Thunbergii is a shrub that does not receive the attention that it should, for we know of nothing better for small hedges.

Prof. Green: It is not on the list with us.

Mr. Sherman: I am surprised at that, because I supposed that it was perfectly hardy any place.

The President: I would like to ask whether it is practicable to grow the cut leaf birch.

Mr. Sherman: I do not think it is entirely so.

Mr. Hawkins: I failed to grow the eunonymous from seed.

Mr. C. S. Harrison: You have to leave the seed in the ground two years.

Mr. Hawkins: I did that, and I mulched it, and it did not come the second year.

The President: I had the same experience myself.

Mr. C. E. Older: Will the cut leaf birch grow from seed?

Mr. Sherman: I think the seed gathered from a cut leaf birch cannot be depended upon to produce the cut leaved young birch.

Prof. Green: I got the ordinary form, and I had no trouble with it.

Mr. Sherman: I think I have grown birch from seed of the cut leaf.

Mr. Harrison: Have you had experience with Norway maples?

Mr. Sherman: They are not satisfactory. I have tried several forms of the Norway maple.

Prof. Green: I have perhaps a hundred or so of Norway maple that I planted alongside of drives. They make a slow growth.

Mr. Harrison: There are a few other things I have been testing. There is the cut leaf sumach. It is getting to be very popular, and I believe it would be all right here. Mr. Sherman said nothing about the black haw, and a good deal of attention ought to be paid to that. Then there is another, the arbutus spirea. It blooms with the tulips. I have seen a good deal of it.

Judge Moyer: There are a couple of native shrubs that have not been mentioned that do very well with us. One is the bush cherry, that grows wild with us, and when planted in a garden it grows from fifteen to twenty feet high and has drooping branches. It is a beautiful tree. I have not seen it cultivated, but that one kind is one of the most beautiful trees we have. Another shrub that ought to be planted, one of our common kinds that grows along the edges of the woods, is a beautiful shrub with leaves of glossy green, and its white flowers and its berries hanging on quite late in the fall make it a very interesting shrub. It is the viburnum lantago.

Prof. Green: The viburnum tomentosa is also a good thing.

Mr. W. J. Moyle: Prof. Green has had a variegated variety top-worked. Is that hardy?

Prof. Green: It stands very well.

Mr. Moyle: Are these lilacs that you recommend not slow growing things? In our climate the blossoms are injured by frost.

Mr. Harrison: The beauty is they do not bloom as early as the old kind, and we have several sorts of them which bloom gloriously. At first I was not favorably impressed with the vilosa, as it had only a little insignificant blossom, but now I consider it one of the best I have, and it is of indescribable beauty.

Mr. Moyle: I was a very enthusiastic lilac man. I was in a place where I took care of a lot of seedlings that had been sent to a gentleman from France. We had a row of several hundred, and I could pick out a hundred different varieties in color. Any one looking at them would hardly notice these variations, but I never tired looking at those lilacs. I procured everything I could get hold of and brought them west to Wisconsin. I set out a lot of them, all of those improved double lilacs and most beautiful varieties, and I am sorry to say they have not been satisfactory with me. Even the Charles X.

bloomed too early in the spring, and there came a hard frost which nipped the bloom. I know it is true that Mr. Harrison says that these Japanese and Chinese varieties are hardy and bloom later, but I do not agree with him in regard to the lilacs. The Japanese lilac may be a beautiful thing, but to me it is no more than the California privet. The bloom is small, and the leaf is not as large as that of the ordinary lilac. Perhaps I have got hold of the wrong tree, but that is my impression.

Mr. Harrison: Prof. Green has it growing here. He can tell you what it is.

Prof. Green: There is a little mix up in these names. I don't know just exactly what Mr. Moyle got hold of, but our specimens are now from twelve to fourteen feet high with a perfect mass of white blooms a foot to sixteen inches long. They bloom about the twentieth of June, fully a month after the others are gone.

Mr. Moyle: Has it the true lilac perfume? Doesn't it stink a little, to be a little vulgar?

Prof. Green: I don't think so.

Mr. Harrison: One of the best lilacs we have is the Chinese tree lilac. It is a very beautiful thing. You do not want to sow the seed in the fall, or you will lose them; but sow early in the spring, and you will get a good stand.

Mr. Hawkins: Now, just a word about the thorn apple. Did anybody ever see it in a lawn? Did you ever see it under cultivation? Did you ever see it sheared? I have a neighbor, an old Englishman, who has a great many English notions. He grows hedges, and he shears them. He says to me "You cannot go up to my place at any time from spring to fall but what there is some plant that will attract attention." He says the most perfect thing he has is that thorn apple. He says there is no plant that he is acquainted with that will stand shearing as well as that thorn apple. He has it sheared in nice shape, and my friend Williams says it is a perfect snowbank in spring, and in the fall it is a beautiful thing with its red berries.

Mr. Alfred Terry: Is not that the English hawthorn?

Mr. Hawkins: No sir, it is a native thorn apple tree that came up in his yard.

Judge Moyer: One of our best native shrubs is the red-berried elder, which is common everywhere. It reseeds itself, and we find it is very beautiful for five or six years, and it seems to me to be one of the most beautiful things we have. The edible elder is also a good shrub. I want to say just one word about the tree lilacs, the syringa vilosa and the Japonica. I have had them growing for five years, and they do very well. Both of them have a heavy perfume, and if made up into a bouquet and placed in a close room many people do not like them.

The President: In regard to the remark made by Mr. Moyle of Wisconsin, his climate is quite different from ours. I imagine

that spring in his part of the country opens up earlier than does ours, and they have more difficulty with late spring frosts. I never had my orchard injured by late spring frosts and never knew the lilac to be injured. The dwarf forms of lilac have been very successful on my place.

NURSERY PROPAGATION OF THE PEONY.

JOHN HAWKINS, MINNEAPOLIS.

The peony is generally propagated by divisions. The roots can be dug and divided any time in the fall after the plant has matured, which is generally about the first of September, until the stalks commence to appear in the spring. As a rule the best results are obtained by dividing and planting roots during the early fall, because this gives the roots that are cut time to callous and new rootlets to form before winter sets in. Care should be taken in digging the plants to get all the roots, especially if the same ground is to be planted to peonies again, because if any roots are left in the ground, even if they have no eyes, they will often remain in the soil two years before forming new eyes and commencing growth. The different varieties can easily get mixed in this way.

The peony will grow and bloom in most any kind of soil, but the best results will not be obtained unless the soil is liberally enriched and thoroughly pulverized to the depth of about two feet. The roots should be planted so that the crowns are about two inches below the surface. For propagating purposes the plants are generally set in rows three to four feet apart and eighteen to twenty-four inches apart in the row. Where the plants are to remain permanently more space should be allowed. The plants commence growth early in the spring, and as they have only a few weeks time to make most of their growth and produce their immense flowers, it is necessary that cultivation should commence as early in the spring as possible and should continue once or twice a week until the flowering season is over, when it will not be necessary to cultivate quite as often. The plants should be kept free from weeds and grass at all times, as they will grow and bloom in proportion to the care and treatment given them. You should not expect much from plants that are half starved. Plants that are old, and inclined to produce too many stalks, should be thinned to fifteen to twenty shoots in order to produce good large blossoms. The plants are gross

feeders, and it will be of great benefit to them to apply a top-dressing of well rotted manure each fall, which should be cultivated or spaded in early in the spring.

Some varieties will multiply very readily, forming four to six good roots in two years, while others will scarcely double in that time. It is not always the kinds that multiply the fastest that are the most desirable. Some varieties, such as Victoria Tricolor, will propagate very rapidly and will also produce a bountiful crop of good blossoms. A peony cannot be judged by the blossoms produced the first or second year after setting. It takes many kinds three or four years before the plant is sufficiently developed to produce the best flowers. Rubra Triumphans, for instance, blooms freely on young roots, but the flowers the first and second year are only semi-double. As the roots grow older, the flowers increase in fullness and beauty.

There are fully two thousand named varieties on the market, and it would be difficult for any one to name the best varieties, but out of the ninety kinds we have tried the following ten have given good satisfaction, and we do not hesitate in recommending any of them:

L'Esperance.—A variety that always gives good satisfaction. Exceedingly fine, vivid rose colored flower; high, full center, very compact, early free blooming, highly perfumed; a good keeper and one of the best for market.

Faust.—A vigorous grower, light pink, large and full.

Grandiflora Rubra.—Extra large, perfect balls of blood red, magnificent flowers. A late bloomer, and when given rich soil the flowers often measure eight to ten inches across. It is probably the largest peony grown. It should be in all collections.

Humei.—A late blooming, superb pink variety. Young roots do not bloom freely, but when the roots get five or six years old the flowers are produced freely. One of the best keepers.

Queen Victoria.—One of the best white varieties for market on account of its vigorous growth, free blooming and good keeping qualities.

Festiva Maxima.—The choicest of all white sorts. The flowers are large and pure white, spotted here and there with crimson. This variety cannot be grown fast enough to supply the increasing demand. We have grown flowers of this variety measuring seven and one-half inches across.

Rubens.—A new, extra fine, glowing crimson flower. A variety that will always command attention on account of its striking color.

Rubra Triumphans.—Early bloomer, flowers like glowing crimson satin; intense, rich and brilliant; very sweet scented.

Purpurea Superba.—A vigorous, purplish crimson variety. The flowers are full, well formed and produced freely.

Victoria Tricolor.—Outer petals pale rose mottled with pink, center ones yellowish white, with few red marks; flowers of good size, full and sweet.

Plants can also be grown from seed, which should be gathered as soon as ripe and either planted or stratified in sand until fall, when it should be planted. Plants raised from seed do not come true to the parent plant but generally produce good flowers. Seed should be selected from the choicest plants and flowers. Many of the choicest peonies do not produce seed and cannot be grown in this manner. Roots grown from seed do not bloom for five or six years; therefore, this manner of propagation is very slow, but in an experimental way is very interesting.

FLOWERS IN MANITOBA.

WM. G. SCOTT, WINNIPEG.

In this paper I have included only those perennials that I have been growing for a number of years in my own garden near Winnipeg and a few varieties that have been found hardy at the Dominion Experimental Farm at Brandon, which I have not yet tested in my own grounds. These may be regarded as hardy in any part of Minnesota, the Dakotas and the Canadian West.

The first to bloom is the bulbous plant, Scilla Sibirica, closely followed by Arabis albida, and then by Hesperis matronalis, in two colors. After these come the beautiful family of Iris, the first to flower in my garden being the Iris sibirica orientalis, a splendid variety, being deep blue in color, in clusters on long stems. These are followed by the Iris Germanica, of which I grow a large number, and which are beautiful in their various shades of blue, purple and yellow. I have not yet tried Iris Kaempferi (Japan Iris), but Mr. Bedford, the director of the Brandon Experimental Farm, reports on these as follows: "A valuable addition to our collection of perennials was received from the Experimental Farm at Ottawa, in the spring of 1905, and planted in the perennial garden. These produced some very fine specimens of blooms which were greatly admired."

Next come the Paeonies, and of these I have a large number, and they are in bloom for a long period. They begin to flower about the end of June and continue through July. The first to bloom is the Officinalis section (Paeonia officinalis),

Rosea, Rubra and Alba, followed by the Chinese (Paeonia Chinensis), the earliest of these being Queen Victoria (formerly Whitleyi), a white flower with yellowish tinted center; and Fragrans, a nice pink; then Humei, a purplish rose pink, very full and double; Lady Bramwell, a silvery rose; Edulis Superba, a shell pink; and a number of others which appear in the appended list. I must not omit Festiva Maxima, the best of all the whites, and pronounced by Mr. Harrison, in his "Paeony Manual," to be "the queen of all, with every point of excellence." This variety is rather difficult to obtain, very often Festiva being substituted for it.

With the Paeonies come the Aquilegias in numerous species and colors, Delphinium, Hemerocallis and Phlox, of which I have a nice collection, and the period of bloom is quite long. Phlox subulata (Moss pink) begins to bloom about the middle of May, followed by Phlox divaricata and Phlox ovata Carolliniana. After these come the tall herbaceous collection, of which there are many varieties. These, when in flower, should be watered freely every evening; if liquid manure is applied it will add to the size of the spike and of the individual flowers. The Subulata varieties require a covering of leaves or straw during the winter, not that they are more delicate than other varieties, but, being evergreen, their foliage is affected by the frost.

Of the roses, quite a few winter well here with a covering of straw or leaves, but they must be on their own roots. The Manetti grafted or budded stock do not survive our winters.

Hollyhocks, Sweet Williams and Canterbury Bells require protection during the winter, and I find that it is best to winter Hollyhocks in the cellar with Dahlias.

I have a large number of other species of plants, a list of which is appended, and to these I am adding each year. I grow them in a long border devoted entirely to perennials, and from about May 10th, commencing with Arabis, or Rock Cress, to the middle of October, ending with Aster Novae Angliae, Boltonia and others, I have no difficulty in obtaining a daily bouquet. This bed unfolds new charms every day and is a source of delight to my family and friends. A bed of perennials, the size being determined by the extent of the grounds, should be in every garden throughout the land. All that is needed is an interest in and some knowledge of the subject. It is not necessary that

the owner should be a professional horticulturist; a love for the work is the only requisite. Even the smallest plot has its possibilities and will repay the cultivator in proportion to his forethought and care.

It will be observed that no mention is made of annuals, nearly all of which succeed well here.

Appended is a list of plants grown in my garden and hardy in Manitoba, season from May 10th to October 15th.

Appended list of plants grown in my garden and hardy in Manitoba season from May 10th to Oct. 15th.

Scilla Sibirica.
Arabis Albida (Rock-Cress)
Hepatica Trieba.
Hesperis matronalis (Sweet Rocket)
Iris Sibirica orientails.
Iris Germanica—Bluebird.
Iris Germanica—Florentina.
Iris Germanica—Madame Chereau.
Iris Germanica—Queen of May.
Iris Germanica—Velasquez.
Paeonia officinalis—Rosea.
Paeonia officinalis—Rubra.
Paeonia officinalis—Alba.
Paeonia Chinensis—Queen Victoria (Whitleyi)
Paeonia Chinensis—Fragrans.
Paeonia Chinensis—Humei.
Paeonia Chinensis—Rubra Superba.
Paeonia Chinensis—Festiva Maxima
Paeonia Chinensis—Pottsii.
Paeonia Chinensis—Lady Bramwell.
Paeonia Chinensis—Francoise Ortegal.
Mertensia Sibirica.
Aquilegia (Columbine)
Aquilegia glandulosa vera.
Aquilegia flabellata nana.
Aquilegia coerulea.
Aquilegia chrysantha.
Aquilegia Skinnerii.
Achillea ptarmica flora pleno.
Achillea millae folia rosea.
Cerastium tomentosum.
Cerastium biebersteinii.
Spiraea (Hoteia) filipendula flora pleno.
Spiraea (Hoteia) ulmaria flora pleno
Spiraea (Hoteia) Kamschatica flora pleno.
Polemonium Coeruleum & Album.
Polemonium Richardsoni.
Lychnis Chalcedonica & alba.
Phlox subulata rosea (moss pink).
Phlox subulata, the Bride.
Phlox amoena.
Phlox divaricata.
Phlox ovata Caroliniana.
Phlox decussata (herbaceous tall growing phlox.)
Phlox decussata Jeanne D'Arc.
Phlox decussata Eclaireur.
Phlox decussata Jean Liebaud
Phlox decussata Henri Murger.
Phlox decussata Bridesmaid.
Phlox decussata Peachblow.
Phlox decussata Professor Schlieman
Phlox decussata Miss Lingard.
Phlox decussata Henry Robinson.
Phlox decussata Coquelicot.
Dielytra spectablis.
Pink (Dianthus scoticus)—Her Majesty.
Pink (Dianthus scoticus)—Laura Wilmer.
Pink (Dianthus scoticus)—Juliette.
Armeria maritima.
Lychnis Alpina & alba.
Aster Alpinus & alba.
Gaillardia grandiflora.
Shasta daisy.
Funkia glauca.
Funkia subcordata.
Funkia variegata (Thomas Hogg).
Platycodon grandiflorum & album.
Platycodon Mariesii.
Campanula pyramidalis & alba.
Hemerocallis (Day lily).
Hemerocallis—Dumortierii.
Hemerocallis—Middendorfi.
Hemerocallis—Fulva.
Hemerocallis—Flava.
Hemerocallis—Kwanso flora pleno.
Hemerocallis—Florham.
Physostegia Virginica & alba.
Dictamnus rubra & alba.
Papaver Orientalis (oriental poppy)
Ranunculus acris flora pleno.
Ranunculus aconitifolius.
Anthericum liliastrum.
Anthericum liliago.
Lilium umbellatum & varieties.
Lilium tigrinum splendens.
Lilium tigrinum flora pleno.
Chrysanthemum uliginosum.
Aster Novae Angliae (Top Sawyer)
Boltonia asteroides.

WINTER STORAGE OF TREES AND PLANTS.

THOS. E. CASHMAN, OWATONNA.

Your secretary having requested me to read a paper on "Winter Storage of Trees and Plants," I will respond by giving you the methods pursued by the nursery firm in which I am interested.

In order that trees and plants of marketable size may be kept in prime condition through the winter months, it is necessary that a frost-proof building be used, and not only frost-proof but well ventilated; in fact, the building should be so constructed that the temperature of the interior may be kept as near the freezing point as possible and yet not freeze. To accomplish this end in Minnesota the walls of the building must be constructed of stone, brick or concrete heavy enough to admit of at least three air spaces, especially if built on top of the ground. The roof should be made equally warm by using several thicknesses of matched fencing, deadening felt and sawdust, with two to three air spaces. Material that will keep out the cold should be used to turn water, for instance, Carey roofing or tar and gravel.

Sufficient ventilation should be provided by means of flues built in the walls and extending up above the roof. The openings can be covered with tin caps or left open, as may be necessary to perfect the ventilation. It is also necessary to have ventilators in the roof, at least every thirty feet. This can be accomplished by building cupolas over openings made in the roof, these cupolas to have windows hung on hinges and controlled by means of ropes hung over pulleys, the ends of the ropes being fastened to hooks inside the building. If these ventilators are properly handled, the temperature can be kept quite even, and the gathering of a large amount of moisture can be prevented, too much of which will encourage mould and mildew and may injure the stock.

We have found that shingle shavings make the best material for covering roots of trees and shrubs in storage. Just enough should be used to cover the roots, but none should be placed on the bodies or branches.

Stored nursery stock must have constant attention in order to keep the temperature right. Our night watchman goes through all departments once every hour and carefully notes the temperature registered by the thermometers which are

hung in different parts of the building and opens or closes the ventilators as may be necessary. He carries a watchman's clock which he punches with keys, that are fastened in different parts of the building, every time he makes the rounds. The dial of the clock indicates the time it was punched. These dials are changed every morning by our foreman and kept for future reference.

Storage and Packing House of C inton Falls Nursery Co., Thos. E. Cashman, Pres. The large building on the right, 80 x 120 ft., is built of stone and lined with a double row of fireproof tiling making it absolutely frost proof. Adjoining thi are the packing sheds and other storage facilities.

Deciduous trees can be taken up in the fall when in a dormant state, packed properly in a building that is constructed in accordance with plans to which I have previously referred, and if carefully looked after will come out in the spring in as good condition as when packed away in the fall; while stock that stands in the nursery row all winter, undergoing almost constant evaporation, severe freezing and occasional thawing, is weakened to some extent, and if taken up and transplanted will not make the growth that is expected of the stock that has been properly housed.

Advisability of Forest Planting.—While the necessity for tree planting has not been felt in this part of the United States so keenly as it has been, for instance, in the treeless West, yet sufficient planting has been done in the past to prove that the growing of wood crops is entirely practicable. Large areas of land in this region are fit for forest growth only, and from an economic standpoint it is important that these lands be put into a state of productiveness. Extensive investment in forest planting has thus far been unduly discouraged by present methods of taxation and, in parts of the region, by difficulty in securing adequate fire protection. The true value of forest land and its rightful place among the permanent resources are, however, becoming appreciated, and an enlightened public sentiment is rapidly making this form of investment safe and desirable.

GROWING SMALL FRUITS ON THE FARM.

PROF. THOMAS SHAW, ST. ANTHONY PARK.

It would be interesting to know the proportion of the farmers in this northwest who grow enough of the various small fruits on their farms to supply their own families and, also, the proportion of those who fail to do so. It is my conviction that in Minnesota and the two Dakotas for every farmer who grows a sufficiency of these there are ten farmers who do not even make the attempt to grow them. This view is based on observation—and it may be mentioned at this point that the passing upon the farms entered for the J. J. Hill prizes gave the writer an excellent opportunity for such observation.

Small Fruits Can Be Grown.—If small fruits could not be grown on farms in the states mentioned, such a condition would afford room for neither surprise nor concern; if great difficulty was found in growing them, or if they could only be grown with partial success, the condition expressed would not afford matter for much surprise. The truth is that there is not a farm in all the northwest on which small fruits could not be grown abundantly to supply the needs of the family. In view of this fact, therefore, and the condition previously stated, the question naturally arises, why is it so?

Why Not Grown.—The answer to this question like that to many others is not so easy by far as the question. It may not be possible to give all the reasons for such an anomalous condition, but it would seem fair to say that some of them may be given. Among these reasons the following would seem to be prominent:

First. The grain growing and grain selling farmer has got into the habit of growing grain only, of sending it to the market, of putting the net revenue in the bank or investing it in more land, as long as there is net revenue, and of looking with a sort of contempt on any other line of production. The same line of reasoning which leads him to buy his butter will also lead him to buy his fruit rather than grow it. If he has followed soil plundering for many years, his habit becomes so confirmed that he will never change. His boy may be persuaded to grow small fruits, but not the father. Reluctantly, therefore, one is constrained to say in regard to this old sinner of soil plundering, "let him alone, he is joined to his idols."

Second. The average farmer has an erroneous conception regarding the labor involved in growing small fruit sufficient to supply the wants of his family. The thought is deeply rooted in his mind that this cannot be done without much labor, and that such labor is called for at a time when other farm work is pressing. Convince the average farmer that he can supply his home with a sufficiency

of small fruit without much labor, and he will set to work at once to do it.

Third. He does not understand the distinction that obtains, or that may obtain, between the best methods of growing fruits on the farm and the best method of growing the same for the market. It

Prof. Thos. Shaw.

may be asked, "Are not these the same, always the same, of necessity the same, unchangeably the same?" I answer, "No, emphatically no." In some instances they may be the same, in but few instances must they be the same.

To make clear my meaning, take the growing of raspberries for illustration. Say to the average farmer, "You must grow your raspberry canes in hills and cover them with earth in winter," and he will not do it except in isolated instances. Say the same thing to the man who wants to make money from growing raspberries, and he

will follow the advice. He knows that he must meet competition in his line that will produce the highest quality of berries and that he must adopt the methods that will conduce to that end, in a sense regardless of the amount of labor involved. Tell a farmer that by planting a dozen apple trees in the spaces around his dwelling and by keeping them sufficiently mulched he will soon have a supply of apples for his family, and he will plant them. But tell him that he must plant these apple trees in a straight row and keep them carefully cultivated from year to year, and he will think five or six times at least before he plants them.

Who Are Most Concerned.—The farmer may not be greatly concerned as to whether his family shall be supplied with small fruits or not, but such is not the case with his wife. The man may be mean enough to ask his wife to make bricks for him without straw when preparing the meal. She knows perfectly well that she can make bricks for him much easier with a supply of straw in the form of small fruits. She will cast her ballot for growing small fruits every time, should a vote be taken on the question in the farm home. In many instances she will be willing to grow them herself if an easy way is pointed out to her of doing this. The same is true of the children of the farm home; they will get to work to grow small fruits if they are only shown how.

This brings us face to face with the question, how can the owners of farms be reached where small fruits are not grown, so that in the future attention will be given to the growing of these?

How to Reach Farmers.—With reference thereto I would suggest the following: Let the Minnesota State Horticultural Society look up some man who knows well the needs of farm homes and the habits of farm life. Let them ask that man to draw up a statement as to the simplest manner possible whereby the farmer can supply his home with small fruits, such as may be grown in this country. This statement should include the growth of strawberries, red raspberries, blackcaps, currants and gooseberries. It should give the method of growing them that will give the farmer the necessary fruit at a minimum expenditure of labor. It should name such varieties only as are known to be hardy and productive, and in no instance should many varieties be named.

This statement should be published in every agricultural paper in the country, and it should also be given for publication to every daily and local paper in the northwestern states. This statement should be addressed to the farmers, their wives and their families, and they should be urgently requested to preserve it for future reference. In this way some families would be persuaded to grow small fruit who do not attempt to grow it now.

A second way to further this end is through the agricultural press. If care is taken by those who have the horticultural department in charge to give farmers line upon line in reference to these simple methods, much would be effected. Too often the aim of writers is to write about the complex and the new, rather than about the simple and the old.

A third method, and a very effective one, is through those who speak on horticultural topics in the sessions of the farmers' institutes. The speakers can reach the farmers with much directness. They can submit those simple methods by aid of tongue and blackboard, and they can make clear to the farmers any matters that they do not fully understand in answering the questions that arise.

The agricultural press and the institute speakers have done good work in this direction in the past, but the fact remains that most organizations and speakers and writers would rather attempt to do some great thing than to labor in pressing home simple problems on those who need them. Most men are far more anxious to carry investigations amid the clouds than on the earth.

The small fruits that every farmer should aim to grow upon his farm are strawberries, red raspberries and currants. He may grow blackcaps and gooseberries, but the three fruits first named will suffice for his needs in the line of small fruits, and they may be very easily grown. Blackcaps whip about with the winds more than red raspberries and involve more labor in growing them, and gooseberries in many of the varieties are much liable to mildew. If but two classes of small fruits are grown, let these be strawberries and raspberries, as these are the most free from insect enemies. The additional fruits that the farmer should aim to grow are the plum and the apple. These are not really small fruits, but in the discussion I desire to submit a few thoughts with reference to the apple also.

Protection for Fruit.—One of the first things to provide is shelter. In various ways it is more satisfactory to grow fruits in a country where winter and summer winds are strong with, rather than without, such protection. Aim, therefore, as far as may be practicable to grow such fruits within a windbreak that forms two sides of a right angle in the more exposed direction or, what is even better, three sides of a rectangle. But the planting of the fruits should by no means be deferred until the windbreak has made advance in growth, for the windbreak will grow more quickly than most fruits.

Growing Strawberries.—The ground should, if possible, be carefully prepared the previous autumn. It should be heavily manured and then carefully plowed not later than August. The manure should be well decomposed. The surface should then be carefully

stirred occasionally to destroy surface weeds. Early the next spring stirring the ground carefully should not be neglected. The plants should then be set in as early as planting can be done judiciously. They should possess strong development. They should come from young plants also and should be plants of the previous year's growth. This is greatly important. They should be set carefully in an even line, making the rows not less than six feet apart, and the plants not less than two feet apart in the line of the row. Shallow cultivation should follow all the summer, and all weeds should be carefully kept out. The cultivation should not disturb the setting of the plants furnished by the runners. This will mean some hand hoeing along the line of the row. The man who will not give it will not deserve to have strawberries. It is especially important that early in the season weeds are not allowed to grow, as they are then so easily kept down before the runners appear. Let the latter follow their own sweet will in rooting. In the autumn there will be matted rows of vigorous plants about three feet across. Of course, the plants should not be allowed to bear the season of setting.

When the ground has frozen a little, cover the plants all over with a few inches of clean straw. Clean straw is better than hay or cornstalks, as the hazard is less that the plants will be smothered. In the spring, not too early, for fear of frost on the blossoms, rake about two-thirds of the straw into the spaces between the rows, leaving the other third over the plants to protect them from being spattered with soil, should heavy rain fall at the time of fruitage. The only additional labor required is to pick the loads of berries that will be furnished and to plow under the patch, to make it ready for something else, as soon as the crop has been harvested.

In the early spring, take plants from the patch first set out, and in exactly the same way put out another patch of the right size. In taking these plants from the home patch, if a trowel is used they can be so lifted without trouble that they will not even wilt when transplanted. It is of great moment to use only vigorous plants. In this way strong, large, luscious fruit will be obtained every year with a minimum of labor.

With reference to varieties, the farmer should plant only those that are self-fertilizing. The man who advises him to plant those which call for fertilization from another variety should be severely reprimanded, as he will certainly get the farmer into trouble. In nine cases out of ten, he will get all mixed up in his planting. The best self-fertilizing varieties include the Bederwood, the Clyde, the Splendid and the Senator Dunlap. The Clyde produces vigorous plants, a strong recommendation in the mind of the writer. If the

farmer will only prepare the ground, his wife or family or both would rather grow the berries than be without them. There is neither reason nor sense in farm homes being without strawberries —or raspberries either, as is further shown below.

Growing Red Raspberries.—It is generally recommended that red raspberries shall be laid down in winter by those who grow them, and that is all right for the professional grower. It will give him a larger and surer return from a given area. But, in my judgment, for the farmer there is an easier way.

The land may be prepared as for strawberries. It may then be planted to raspberries the following spring. The planting should be done early. The rows may be made, say, four feet apart, and the plants, say, three feet apart in the line of the row. The reason why such close planting is recommended is that the canes may sooner cover the ground.

The first season the cultivation should be clean, allowing all the young shoots to grow at the same time. In the autumn give a good top dressing with rough manure. This and the leaves should prevent weeds from growing the following year. The canes should produce considerable fruit. Other canes will grow up and pretty well take possession of the ground. Top dress similarly again. The following spring dig out all the weak canes, and those that crowd too much, and throw them in a pile for burning, and cut away also dead wood. No further labor will be called for during the season. For a limited number of years, say three, four or five, good berrries can be then obtained. A new patch should, of course, be started before discarding the old one.

I have grown raspberries by this method on the same ground for five or six years in succession, but incline to the view that a shorter term of years would be better. There has been some freezing back of the canes, but only in two instances could it be said to be serious, and I noticed that in these instances canes growing on plots but one and two years old suffered but little from freezing back when those standing for a longer period suffered considerably.

With reference to varieties, only the hardiest should be grown by this method. As an old standby, the Turner cannot be surpassed. The King has also been found hardy and productive and is larger than the old standby previously named.

Growing Currants.—Of all the kinds of small fruits grown, none is grown with less labor than the currant in its different classes, the red, the white and the black. As is known doubtless by all, the currant is propagated from cuttings. These are taken in the early spring from vigorous shoots of the previous year's growth and

pushed down a few inches into the soil. If planted in good soil and kept clean, by the next season they will be well rooted and ready for being planted where they are to remain.

The distance for currants will vary with the variety, but it will be at least approximately correct to say that six feet will suffice between the rows and five to six feet between the bushes in the line of the row.

The first season cultivation and hand hoeing will be necessary; subsequently the bushes may be most easily kept clean by applying annually in the autumn a mulch of farmyard manure. If enough of this material is applied, there will not be much trouble from weeds, and no stirring of the soil will be necessary. The only additional work in growing the bushes is the pruning. The weak shoots should be cut out every year. In addition to this after, say, the second or third year from setting out, some of the oldest wood should be removed to make room for what is younger. The latter bears a much larger and better fruit.

This fact shows the greatness of the mistake made by those who try to train the currant so that it will grow in the miniature tree form rather than in the shrub or bush form. With only one stem supporting the limbs, the wood soon becomes old. With fresh canes springing up from the root at the surface of the ground every year, the bushes may be made to renew their strength.

It would be curious to know how many years currant bushes will live when grown on the shrub plan. The duration of possible life would probably be not less than a half a century. Notwithstanding, I doubt the wisdom of leaving a currant plantation longer than, say, six to eight years without renewal. The bushes become more and more difficult to prune. Some grass is likely to become entrenched in them, and the fruit is not of so high quality, even under good management, as that obtained from younger bushes. The time soon comes when every bush goes past the zenith of highest power to produce, just as the inevitable time soon comes when every prize fighter comes to be classed as a "has been." Of course, the young plantation should be ready for abundant fruitage before the old one is discarded.

The greatest difficulty in growing currants comes from the prevalence of the currant worm. This means that some insecticide, as hellebore, must be dusted on the plants, or that some spray must be used. To such work the farmer is usually much averse, and it comes at a busy season. This, probably more than anything else, stands in the way of growing currants. But it is usually part of the price paid by those who are to have them from their own bushes.

What has been said about growing currants will also apply in the main to growing gooseberries. The mode of propagating is different. The latter are obtained usually from rooting canes or branches by laying them down or by severing these with a rootlet or two adhering to them. The prevalence of mildew, however, in this fruit, lowers it much in suitability for the needs of the farmer.

Growing Blackcaps.—These are propagated by allowing the tips of the young canes to root in the latter part of the season. They should be planted in squares, not closer than six feet where a plentiful supply of food is maintained in the soil. These may be kept clean just the same as currants. The pruning consists in removing the old canes as soon as they have borne, and to some extent clipping back the new ones when they become over-exuberant, or when they are not to be allowed to root. When a cane is allowed to root its bearing power is weakened.

During recent years I have grown blackcaps in the sod on some neighbor's ground. A little circle around each bush is kept clean. Of course, I would not recommend this plan to the farmer, as it involves too much labor. I do it as a pastime, and because there is no room in the nineteenth part of an acre which I cultivate. Since growing these blackcaps I have noticed that in the grove hard by, blackcaps are springing up on every hand. To prevent the winds from swaying the canes and breaking them may involve the necessity for considerable cutting back during the period of growth.

Growing Apples.—With, say, from twelve to twenty-four trees, the farmer should get enough of this fruit to suffice for his needs when the trees come into full bearing. In the absence of a better place he can put those trees in the lawn or grass around his dwelling, but not, of course, as a matter of taste in front of the same. From the day he plants them he can grow them by suitably mulching with straw or grass or coarse manure. This should be applied every year. The strength of the mulching should be determined by the rate at which the tree is growing. The farmer's apple tree should not grow too fast, or sun scald—and other ills will come to it.

The conviction grows on me that there is some relation between rapid growth in apple trees and blight. In looking over many orchards last summer, I noticed that the orchards most free from blight by far were those that were not cultivated. In this climate of cold winters we should be slow to make haste in securing rapid growth in apple trees. Let the farmer set his trees in the sod, head them low, protect the stem with wooden shields for a time and regulate growth by mulching, and he should soon have a supply of apples.

The varieties should not be many. Some of the Duchess of

Oldenburg, Wealthy, Patten's Greening and, probably, two or three more standard varieties, will be ample. It is also a good plan to set out two or three trees each year to take the place of old ones that for various reasons become unprofitable.

Avoid Trucking in Fruit.—As a rule, the farmer should avoid trucking in fruit. That is a business in itself. To enter that field would mean that the farming would suffer. The farmer should aim only to grow a plentiful supply for himself and family. If he grows too much some seasons, let him enjoy the luxury of asking some neighbors to come and pick the surplus. If fruit is grown on the lines indicated, those who grow it will be surprised at the smallness of the area required. They will also realize that the labor called for will not interfere with the regular work of the farm to any appreciable extent.

Mr. Henry Husser: I think it is wrong to advise to plant trees in sod and keep them in sod to protect them from blight. I think it is rather better to cultivate a tree and feed them with certain substances to prevent blight. I think it is the exhaustion of the soil that causes blight in trees, because trees in a newly planted orchard are not so subject to blight as trees in an old orchard, whether in sod or cultivated, and I believe it is better to give them cultivation.

Prof. Thos. Shaw: You have heard the question the gentleman has put. I am not surprised that it has come, and although I recognize the fact that nine out of ten persons in this house are on the other side, yet that does not shake my conviction, and I cannot put it away from me, and this conviction is based upon my observation in traveling through the state of Minnesota, that the best fruit is grown and the trees live the longest when planted and kept in sod. But, mark you, the trees must be carefully mulched every year and their growth carefully regulated by that mulch.

Mr. A. Brackett: I agree fully with Prof. Shaw in regard to growing trees in sod. I would much rather have a tree of small growth and have a healthy tree than have a large tree and have half of the top killed by blight. I can agree with that argument, but I cannot agree with what he says regarding the Turner raspberry, that is, for general planting. Out of thousands of acres I do not know of a single plantation of Turner raspberries that is paying, while the King is perfectly hardy and grows a fine berry, and I do not think the farmer would want a better berry than the King.

Mr. J. M. Underwood: I cannot let this subject go without a defense of cultivation. My observation and my experience are both based on the care of thousands of trees in the orchard, and if there is any more blight in the cultivated orchard than there is in the orchard that is in sod I do not know it, but I do know that if anything there is a little more blight in a sod than in a cultivated orchard.

Prof. Shaw: Mr. President, I have this to suggest: We have a state experiment farm. We have one of the best professors of

horticulture in all the United States. Here is something that can be demonstrated by actual test so there will be no doubt about it. I am not afraid of the outcome should the test be made. Set to work and get that eighty acre farm, as suggested by the president, and let Professor Green decide that question. It is one of the most important questions that confronts apple growers today.

Mr. S. D. Richardson: Has not the United States been experimenting along this very line for five or six years in Ohio? Those that were grown in sod and mulched were best, and those that were given some kind of a cover crop with cultivation were next.

Prof. Shaw: The gentlemen will remember that experiment took place in another state; this is Minnesota. I want to be perfectly fair, and the conditions in another state might make the result entirely different. This is a question which must be decided in the state of Minnesota; it cannot be decided in Ohio or any other state. I am not here to say that farmers shall plant out orchards and never cultivate them. They should cultivate them a couple of years, but as soon as they can let them put them in grass and regulate the growth by mulching, and that is the only way to keep the tree in a healthy condition.

FOUR MINNESOTA ORCHARDS IN FIFTY YEARS.

WM. S. CHOWEN, MINNETONKA.

Fifty-three years ago the first week in June, 1853, I took a claim on the land upon which I now live, and having come from a part of the country which I considered one of the best apple growing sections in the United States I thought an orchard should be the first thing I ought to prepare for. When I went to work to prepare for an orchard the first thing was to get grafts to start the orchard. At that time there were not many inhabitants in this part of the country, and there were not so many nurserymen in the business as there are today. In 1856 I had my orchard ground all ready. About that time I saw an advertisement in a paper of a man up at St. Peter who had grafts to sell. I sent there and got fifty and set them in the orchard, and they grew. I want to state right here, before I forget it, that I never lost a tree in my life when I set it out, and I have set a great many trees. Those grafts grew nicely, and when they were two years old I set them in the orchard. I want to make this statement here because this society is considered pretty good authority on orchards. When they were four years old from the graft, my old friend Gideon, up there on the lake, came down to see me on some business. He knew I went through the bluffs up there with a gun once in a while, and he asked me to test all the wild plums I found; so he had come down there to see what I had found.

After we had talked business I said to him, "Mr. Gideon, I have an orchard which I think is very promising, and I would like to have you look at it." He made a critical examination of every tree and said, "Mr. Chowen, you have the finest prospect for an orchard I ever saw in my life." This came from pretty good authority, and I thought myself I had a pretty good orchard.

The trees were growing nicely, and they began blossoming when they were six years old, some of them. I guess there are enough here who remember that about that time Father Abraham had had a little difficulty with the people down south, and he sent an agent to me who said, "Mr. Chowen, we would like to have you help us." I shouldered a gun and went south, and when I left home I had the finest prospect for an orchard. The prospect could not have been better. I think they were all in blossom that spring. I went away in July, and there were a good many trees that had apples on that summer. When we got things settled down there so I could come home—and I came home in July—there was not a single tree alive, they were all gone. The roots were alive when I dug them out, but the trees were gone. They had apparently decayed from the heart, because there was some of the outside bark that was alive when they were broken down. Some of them were not down, but they had not leafed out.

That was the first orchard. I concluded to have another, so I hunted around for somebody who had young trees to sell. I finally found a man who had some. I got the same number of trees and set them out—and there is no use talking it all over again, but the same results followed as in my first experience. They started very vigorously, they were nice young trees, and about the time they began to blossom they also began to break down. I think they were probably eight or nine years old when all of them were gone except two. I had two trees that were green and promising as any I ever saw, and that was the Haas and what we would have called down in Wyoming county a harvest apple. It ripened in August, and it was as fine an eating apple as I ever tasted in my life. It was a small tree, it did not grow large, and the apple was of medium size, and when ripe the apple had a sort of yellowish bloom.

I concluded to have an orchard, so I began to talk with some of the leading men of this society, Mr. Gideon, Mr. Grimes and others, and I think I talked also with Mr. Elliot. They advised me to get the Wealthy and Duchess. I thought I would do so, and so I ordered a number, I do not know how many I ordered, but I know I paid a hundred dollars in cash for them to somebody in this state. I do

not remember the names of any of the men I dealt with. I got the apple trees and set them out, but it was the same thing right over again, only they lasted three years longer than the others. These apple trees never had any weeds about them, they had clean cultivation. I got some ideas from my friend over there, Prof. Shaw, in regard to my experience. I have since thought a great many times that I took a little too good care of them.

I only give you the facts as they occurred, because this is time to have the conditions that existed demonstrated, and I simply give you the facts as they occurred.

After that orchard was gone I made up my mind I would try crabs to see how they would do on my ground. I had a first rate soil, black sandy loam. A man came along and stayed all night with me, who was dealing in apple trees. I got one hundred crab apples of different varieties then propagated in this state. I cultivated them and took good care of them, and those crabs began to bear and then to blight. They did not die at once. The body did not die as quick as the others when they began to blight. It was recommended to me to spray, but being an invalid at that time—and ever since I came out of the army—my boys had all they could do to keep the wolf from the door, so I told them we could not bother with spraying. But the trees kept on blighting, and by and by they were all broken down. I concluded I would not try any more apple trees, but I knew the roots were not dead. I let a few of them stand there, and they sprouted, but there were only two of these trees that bore the same kind of fruit as the original trees, and they were the Hyslop and the Soulard. These are still alive, but the Hyslop blights somewhat. The sprouts that came from the other trees grew until they bore, and then they began to blight.

Now, gentlemen, this is all I can say about the four orchards I have raised in fifty years.

NEEDED FORESTRY LEGISLATION.

PROF. S. B. GREEN, ST. ANTHONY PARK.

(An address delivered before Minnesota Forestry Association in December, 1906.)

I want to say a few words in regard to what we need in the way of forest legislation. There are a whole lot of things we need, but I want to simply refer here to some things that I know we need, and that I think we ought to have within a short time, and this session of the legislature that meets this winter ought to take favorable action in regard to these matters.

Now, we have in the state of Minnesota what is known as the State Forestry Board. That board was created by act of the legislature and is made up of nine members. Three are appointed by the Board of Regents of the University, two are ex-officio members, the professor of horticulture of the university and the chief fire warden of the forestry commission, as it is called. There are seven members nominated by the governor, three of them are recommended by the Board of Regents, one by the Game and Fish Commission, one by the State Horticultural Society, one by the State Forestry Association, and one by the State Agricultural Society. The object in creating that board was that there might be somebody that would hold lands for the state and manage them on forestry principles. It was thought, and with every reason to believe at the time that board was formed, that there would be a large amount of land deeded to the state for forestry purposes, but unfortunately there came a land boom about that time, and as a result of that land boom there was a great increase in the price of timber land in northern Minnesota. Many of the values put on the land at that time have been shown to be fictitious, but it resulted in the price of land being held very high, and, as a result, we got but one thousand acres out of what we supposed would be from 150,000 to 200,000 acres. There is a large amount of land in this state that is practically adapted only to forestry purposes. I do not know how much, but it runs up into millions of acres. There are some counties in northeastern Minnesota that have almost no agricultural land in them. You hear some people say that we have no land that is not agricultural land. What they mean is that we have no land from which one could not get a living. But we have a large amount of land that can be better used for forestry than for agriculture, for our forests are disappearing rapidly. This board went to congress and asked congress to set aside or allow them

to select twenty thousand acres of land for forestry purposes. That was granted, and two years ago, about this time, that twenty thousand acres was patented to the State Forestry Board, selected from land in St. Louis County. It is beautifully situated, with a large amount of water within its borders, containing a beautiful body of water called Burntside Lake. Burntside Lake is considered one of the most beautiful lakes found in America, a beautiful body of water that is a delight to the eye of every one who sees it.

You see the State Forestry Board has this twenty thousand acres and one thousand acres. When congress set aside, the twenty thousand acres of land for the forestry board it was expressly stipulated, and the state agreed to it, that it should be used for forestry purposes only, and that the state should take care of it, but the state has not done anything. The forestry board has no money to do any surveying outside. The survey is incomplete, and there is nothing done that should be done. I think one thing the legislature should provide for is a practical survey to bring out a working plan for that twenty thousand acres of land. Governor John S. Pillsbury, shortly before his death, deeded to the state one thousand acres of land about twenty miles north of Brainerd, near Gull Lake. This land is fairly good agricultural land. The Forest Reserve Board took out of the thousand dollars provided by the legislature for its office expenses enough money to establish on this thousand acres a nursery of about one acre, on which it desires to plant a considerable amount of pine and spruce. The last legislature made no provision for properly surveying this reserve. We asked them for an appropriation that would provide for the planting out of these trees grown there—and they ought to have been planted a year ago, and we should have asked the last legislature for an appropriation for that purpose. The young trees are being hurt because they are growing too close together. I think there are about six hundred thousand spruce growing in that nursery, and as beautiful a lot of trees as any one ever saw growing, but they are suffering because they have not been transplanted.

There is an opportunity for the state to do something with forest trees. What is our opportunity? That is the practical question. We have practically decided that with that reserve we would show what can be done in the way of raising spruce

for paper pulp. Estimates have been made at the university to show that by planting this spruce in small beds, if the spruce is properly planted and cared for it will yield from forty to sixty cords of wood per acre in thirty to thirty-five years. That spruce pulp is worth at the mills about $7.00 per cord in this state. You see, regardless of what has been said on this point, that this land is of very little value for agricultural purposes at this time. Let me tell you the facts. On that particular land on which this tract is situated there were twelve families who moved out. Why did they move out? Because they could not make a living there as easily as somewhere else, and they had gone out on the prairie. This land some day may be better fitted for agriculture than for forestry, but today that is not the case. I understand this autumn a large number of people moved away from there.

We have a man in charge of this little reserve, especially of the nursery. He is a Dane, and he had a little something to do with forestry in the old country. He is quite a reliable man. He was married some sixteen years ago, and he told me this fall he is going to move out of the country in case things are going to change again so he would be six miles from his nearest neighbor, as he was when he first moved in there. If that does not show that the country was over-boomed, I would like to know what it does show. These are facts, and if you want to know the town, range and quarter section, I can give them to you. The state ought to provide means for planting out these seedlings and for carrying out that experiment. There are lots of people in this state, lots of people in the country, that have a general idea that forestry would be a good thing in a general way, but when it comes down to doing something specific they do not know what to do, although they want to do something. If it were possibly practicable to take the legislature up there and show them the conditions as they exist, they would undoubtedly take hold of the matter and make it a success. But very few members of the legislature and not half of the people in the state know anything of the conditions in the timber section of the state, and it is a difficult matter to make the legislature appreciate this as they ought. It seems to me this is a great sort of wealth that we ought not to allow to slip away from us.

There is another matter that is very dear to me, and I think

the state should provide for that. It has got to the point now where education through laboratory work is absolutely necessary. Years ago, when a hog was a hog, it was not necessary to have things practical and plain, but today we have got a long way from that condition, and in our practical educational work we must employ laboratory methods. In connection with forestry we need, in order to put our forestry instruction work in the university on a good basis, we need the opportunity to demonstrate work in the field, and we have got to have it some way or another, and we are going to have it some way or another. I do not believe the people of this great state are going to quibble about putting the work in a practical and satisfactory condition. Now, the question of ways and means comes up, as to how it can be done. As showing that future wise foresight on the part of some one, and perhaps due to the guidance and direction of an overruling Providence, which controls so much the affairs of life, the state now owns about fourteen or fifteen hundred acres of land in Hubbard county. It is known as the Itasca State Park. This park was formed at the headwaters of the Mississippi river for the purpose of preserving the evidence of the source of the Mississippi and to preserve thereon the natural pine timber, so that there might be something to look at when our state got big enough to take an interest in this matter. And that park is admirably adapted for demonstration work such as we need now in the university. In that park there is standing some twenty odd million feet of pine, big old trees. It is a game preserve, and there are all kinds of game and fish in the park. It is a beautiful place, and last summer I understand the hotel in the park was full all summer, and there were more applications for space than could be filled. This park is located about twenty-five miles from Park Rapids, which is on the stage route to Itasca Park and on the road to Bemidji. It is a good road, and there is a daily mail service. Our idea is that we should use this park in some such way as this. At present it is under the control of the governor and the attorney general, and they are very desirous that it should be put into the hands of the State Forestry Board. If it is put into the hands of the State Forestry Board I know that that board would aim to make it an example of what is possible in the state of Minnesota in the way of forestry in producing pine grown under forestry conditions, the same as it is done in Europe. If that

park was put under the control of the forestry board, it would be an ideal place for a forestry school. My idea is that a school could be established there under the direction of the Board of Regents of the University, and for that purpose they could use the old house that is standing in the park. It could easily be put into condition for use. The students would go up there the first of April and stay until the first of September. They would take such work as nursery work and such as came up in connection with the planting and care of trees. By sending them up there the first of April and letting them stay until the first of September they could be put in touch with actual forestry conditions and would have the best opportunity in the world for making a study of them. They would be brought face to face with the actual thing. I also think the legislature should provide proper fire protection for this park, and that would be another thing that could be demonstrated in this school of forestry.

The legislature ought to do a number of things, but these matters appeal to me especially, and I am sure they would mark quite an advance in the forestry situation in this state were they undertaken.

President Owen: There is no doubt but what every word that Prof. Green has said is absolutely true, and this great State of Minnesota should take hold of the forestry matter immediately. I took up the paper the other morning and read an item saying that one of the large sawmills of this city would be closed forever. Now, this is but the beginning of the end. The grand heritage that was left to these people is being swept away, and the people have not been benefited. In the earlier days of this state the great pine forests were wasted. I know very well that in the early contracts for logs made in this state, it was specified that no logs should be cut smaller than eight inches at the top and now they are willing to cut logs not over five inches, and I have seen down in the state of Maine, in booms and in mills, logs that would not make telephone poles, and so crooked that it would be utterly impossible to get anything out of them in the shape of lumber, except by cutting them up into four and six foot lengths. The State of Minnesota is suffering the same way, and ten years from now I do not believe there will be a sawmill running in the city of Minneapolis. Is it not time for the government to take hold of the forestry situation when there is an opportunity like this in the State of Minnesota? I believe sentiment is growing so strong that people will demand that the state make an appropriation for growing timber and the cultivation and reforestation of the land.

IN MEMORIAM, ANNUAL MEETING, 1906.

AN ADDRESS BY HON. S. M. OWEN, MINNEAPOLIS.

(Delivered at Annual Meeting, 1906.)

To me has been assigned the duty—I feel that am justified in saying, the honorable distinction—of asking you to lay aside for a few minutes thought of the material or earthly affairs that you gather here to discuss, and in their stead give thought to those of our brothers who made up the quota that death demanded of our membership during the past year.

This should be a particularly impressive hour, because the tribute laid upon this society by the inevitable since its last meeting has been a heavy one, the largest contribution it has ever been asked to make in the same length of time. Nine names have been stricken from our printed membership list and placed upon the tablets of our memory and upon the giant roll of the immortals.

Those who have passed beyond our physical ken during the year were known to us as William Somerville, O. M. Lord, R. J. Mendenhall, Amasa Stewart, Capt. R. H. L. Jewett, William Oxford, Jonathan Freeman, A. W. Sias, Charles Leudloff and S. D. Hillman. The last named was your secretary for several years.

I am not, of course, expected to pay tribute to each of these departed brothers, to comment upon their individual virtues nor extol their achievements 'Twould make an address too lengthy for me to make or you to endure. But I will endeavor to say something in a general way that may voice the estimation in which we hold all of the grand souls we have known in this life, those whose souls we now know were grand because they fought their good fight heroically, contemplated their defeats philosophically and their victories with modesty; only grand, good souls can so deport themselves.

While this should be, and doubtless is, an impressive hour, even a holy one, yet should it be a sad hour? We are now face to face with the inevitable, and whether we regard death as the grim boatman that rows us out upon the dark waters of oblivion and sinks us there; or as the genial, welcoming-faced gate-keeper to a glorious eternity of consciousness, yet should we contemplate our inevitable surrender to that power with the courage born of the trust that our good mother nature doeth all things well. At the most we know but little of the inevitable fate of the man of clay. To our contracted, earth-environed senses death is a ravaging monster. It severs the tenderest ties our hearts experience and enjoy; it destroys the altars of the home; he takes from the dependent their dependence; it blights hopes, strangles aspirations and paralyzes endeavor. And yet death is not all bad. It has been written: "It is impossible that anything so natural, so necessary and so universal as death should ever have been designed by Providence as an evil to mankind." We do not need to invoke our theology nor call faith to our aid to prove the truth of this quotation; our own lives and experiences testify to its truth.

To comprehend a historical era or event, to see the true grandeur of a landscape or the real beauty of a large painting, we must be far enough removed from it to see it in perspective, to bring all of its effects, features and colorings under the eye at once. To see history in the making gives no conception of its present import nor future effects. Being in the midst of a scene one cannot see it. A stage setting looks very unlike to actors and audience. The mountain top, reached after great effort, does not possess the grandeur and beauty that as a distant view tempts one to make the effort.

Chas. Leudloff, late of Carver, Minn.
Honorary life member.

The painting, a world's masterpiece, is a daub without meaning or beauty until seen at such a distance that all of its roughness and all seeming crudities are lost to the eye and it is transformed into a thing of entrancing beauty, a harmonious vision of form, proportion and color.

So it is with our human fellows, our associates and friends. When they are with us and of us they symbolize the mountain top whose grandeur is lost in our nearness to it, the landscape whose beauty we cannot see because we are a part of it, and the picture that seems rough and incongruous because it is so close to the eye. Perhaps all of us will admit that we do not see our associates as they are while they are associates. We do not appreciate their virtues, admire their courage, understand their strength of character

nor tolerate and excuse their weaknesses, by reason of our own imperfect vision.

Like the objects mentioned, our fellows must be seen in perspective to be truly seen. When a friend removes from us in this life we quickly minimize the traits in his character that annoyed us when intercourse with him was frequent or constant, but we do not forget them. He is not yet far enough removed to reveal his true perspective; he must enter "the valley of the shadow" before we can get the perspective that reveals him as he was really. It is commonly said that "death glorifies." I prefer to believe that death reveals! Distance does not glorify the landscape nor the painted picture—its glory is there all the time; distance merely reveals its glory to the eye.

Now, what higher tribute can we pay to the virtues of our brothers who so recently left us than to say that they were as good, as useful, as beneficial to the world, as nearly perfect as we are now thinking they were? Whatever estimate you may be putting upon them at this moment they deserved as richly when they were with us as they do now, but the estimate that was qualified then is unqualified now, because we see them now in the perspective that death only can create.

Here, then, is an example of death's goodness, kindness and the wisdom of its ordering. When contemplated in its true light it becomes a great teacher, a tremendous civilizing force, a promoter of human sympathy, of patience and of toleration. It is death only that teaches us that truly good men and women can and do live on earth, for as we see them through death's perspective so they were when here. Are our departed brothers good, true, generous, brave, honest and in all things worthy, as we contemplate them at this moment? If so, then we know that such men can and do live on earth, always have and always will. Death is the only teacher of this great, soul-uplifting philosophy. Then how can death be called man's direct foe?

A celebrated agnostic said that in one respect he could improve upon this world if he were allowed to make one; he would make "good health catching instead of disease." But he would have been a very unwise world-builder. His witty aphorism implied that he would have no disease nor death in his world, forgetful of the great and vital fact that if there were no disease to excite the apprehension of those who love the diseased one, if there were no pain to arouse sympathy, no fear of death visiting the family circle except to remove very aged members of it, there would be wanting those characteristics of our nature, affection, sympathy, charity, all the attributes that "make man but little lower than the angels," and under the operation of such a lack in our social economy the world would speedily lapse into barbarism.

With this conception of death, are we justified in regarding it man's greatest enemy and in clothing it in the drapery of gloom,

woe and dread that has been woven into the web and woof of our being? To the wounds of stricken mourners that separation, desolation and loneliness have inflicted, we can bring no balm; but may we not, in a measure, at least, assist time, the only effective physician, to heal the wounds more speedily if we can rob death of some of the horrid characteristics with which inherited conceptions have clothed it. And will not this truer conception of death strengthen all of us who are now on the down-grade of life—from the bottom of which will be viewed our last earthly sunset—and endow us with the courage to meet the inevitable, and

> "By an unfaltering trust approach the grave
> Like one who gathers the drapery of his couch
> About him and lies down to pleasant dreams."

Now let us abandon generalities, and come nearer to those to whose memories we have dedicated this hour, so that we may realize what death has done towards revealing them to us as they really were, which may be quite unlike what we thought they were when they were of us, with us and too close by to be seen with true appreciation. Looking at them now we can see their virtues more clearly, estimate their courage more correctly, and discover a heroism in them that was not comprehended until death created the atmosphere thru which we might see them as they were.

It is natural and commendable to admire heroism, but man fails to recognize it in so many instances that the failure becomes uncomplimentary to his intelligence or discrimination. The military uniform so frequently suggests heroism that it has generated the belief that true heroism most abounds on the battlefield, and that we must look there for the best examples of that virtue. But this is a mistaken conception and does a great injustice to the heroism of which some, at least, of those to whom we are now paying loving homage were worthy examples. Heroes we now know them to have been, since in death's crucible there has been refined from them the dross of earth life that concealed from our eyes their true nature, their noblest characteristics.

Those who essay the conquest of a country or a region with axe and plow are actuated by a sublimer heroism than are the hosts, panoplied for war, who seek conquest by sword and gun. The soldier's deeds of valor are not the result of cool, calm, deliberate thought. Valorous they are, it is true, but it is the valor of impulse, the fruit of an ecstacy of excitement, emulation and pride, finally resulting in a mad desire to avenge fallen fellow soldiers by triumphing over the enemy at any cost or hazard. The enginery of war is there in all its pomp, splendor and demoniac destruction: music to make one momentarily forget danger; banners to arouse pride in country, state or regiment; intrepid leaders that followers do not think of failing to emulate; the roar of guns, the clash of bayonets; the fear of pain or death submerged in the bountiful harvest of it on every side. Or, if perchance

thought of death does come, with it comes the thought of a grateful nation that will, with parental care, sustain the loved ones he leaves behind; thought of the world's applause, a sweet refrain that will herald his soul to the hither shore; thought of song and story that will tell of his heroic deeds in history and on marble shaft.

While we would not pluck a single leaf from the crown of laurel that the soldier nobly wins, yet it is only fair to contemplate the surroundings of the heroes and the setting of the heroic deeds of the soldiers who fought in the wars of peace and especially in the wars of peaceful conquest—the wars that have for their object the extension of civilization, the enlargement of the realm of civilized opportunity, of civilized homes and their surroundings of schools, churches, highways, fruits and the other characteristics that distinguish the wilderness from cultivated fields, civilization from barbarism.

In such wars heroic deeds—and they are myriad in number—are performed after studious contemplation of all they imply in hardship, deprivation, danger, uncertainty and possible defeat at the end. There is no pomp and circumstance of the other sort of warfare to inspire, thrill and excite the soldier in this sort; there is no affluent commissary for him and his dependents to draw upon; no well equipped hospital as a refuge if stricken with injury or disease; no hope of a place for his name in song or story if he falls a victim to his courage and his hopes; no marble shaft to carry an imperishable record of his achievements down to distant posterity. Still he struggles bravely, fights manfully and faces disappointment and disaster unflinchingly. And all this he does alone, probably remote from the haunts of man, save the members of his own family, to make a future home of comfort and refinement for them being the only glory he covets. He battles against many foes that no valor, heroism, strength of arm, power of will or cunning of brain can overcome. And he may be confronted by other foes, wild beasts or wilder men, whose attacks can be avoided or repulsed only by the exercise of eternal vigilence, and the skill and courage of successful defense.

In all of these environments disease and possible, even probable, death confronts him, yet he toils on, struggles on, battles on, hopeful, smiling, undaunted, though he knows that if he fails in the conflict there will be no applause of world or nation to accompany him to that undiscovered country from whose bourne no traveller returns, and that the only music to cheer his tired soul upon its weary way will be the pattering rain of loving tears upon his coffin's roof.

It is under such circumstances and surroundings that the highest, noblest type of heroism is developed. Doubtless each one of us has known a widowed mother, distracted by grief and in the depths of poverty, take up the gage of battle thrown down by fate and prosecute to ultimate success a struggle for the support and rearing of her children that the most valiant soldier of history would have fled

from in dismay. Which, then, displays the nobler, the sublimer heroism?

Those whose names are before you now were participants in one of the conquests of peace which are fruitful of heroes and heroism, and each acted the part assigned to him by fate or circumstance like the best of all soldiers, those in whom duty, fidelity and conscience are united. They helped to subjugate a wilderness, were pioneers to civilization's advance; they planted the seed from which were developed the institutions we are enjoying now. They were home makers and state builders. They were Johns "crying in the wilderness" the coming of future glories, the peace, plenty and luxury in which we now participate. They planted in travail that others might reap in joy. They were examples of true patriotism—forgetful of self they wrought for the future. They planted trees the more cheerfully, because conscious that others would enjoy their shade and fruit more abundantly than themselves. If they enriched the flavor of a fruit or the perfume of a flower, they were rewarded by the thought than unborn hosts would enjoy the fruits of their endeavor and success.

Such men, so inspired and actuated, could not be other than good husbands, good fathers, good neighbors, good friends and good citizens; and these last are man's crowning virtues. But when to them we add courage, fidelity, patriotism, unselfishness and an earnest endeavor to make the world better by having lived in it, then we have exhausted commendation and bankrupted eulogy; for when one of God's children possesses all of these qualities he is a man after God's own heart, and we need not concern ourselves about his church affiliations, his faith or belief. "By their works" we know them, and that is sufficient.

When we pay this tribute of respect and love to the memory of those who have passed on during the year, and the preceding years as well, we honor ourselves. And what consolation can we bring to the surviving members of the families of such men that will contain more of solace to bleeding hearts than the assurance this hour conveys to them that we now clearly understand and can appreciate the qualities of head and heart that made their taking off such a cruel affliction to their loved ones?

I cannot conclude the part assigned to me in this occasion without expressing the belief that no other one thing would do more to make this world better worth living in than would the granting to us a power of perception capable of making us see, understand and appreciate our associates while they live, as we do the moment their earthly pilgrimage is ended. If that could be so then there would be an all pervading peace, gentleness and love in the world that passeth understanding. And it would make occasions of this kind more inspiring, because every participant in them would be exalted by the gratifying recollection that he clearly understood and appreciated, while in this life, those who have "gone before."

Secretary's Corner.

Delegate to the Wisconsin Meeting.—Mr. R. A. Wright, of Excelsior, has been selected as delegate to the next annual meeting of the Wisconsin Horticultural Society and has accepted the appointment. A report of this meeting may be expected from him in the first issue of our monthly following thereafter.

Delegate from Wisconsin.—Mr. W. S. Hager, of De Pere, Wis., has been selected by President Coe of the Wisconsin State Horticultural Society as the representative of that association at our coming annual meeting. We may expect to hear from him on some practical topic connected with fruit growing, as we understand he is a successful fruit grower.

Premiums on Tree Planting.—Mr. P. G. Nystrom, of Worthington, Minn., raises the interesting question whether the premium offered by the state for planting trees for a period of years would not be applicable to plantings of fruit trees. As the party referred to has twelve acres planted in apple trees, it would be quite an item for him to receive the premium referred to. Substantial encouragement in this way for orchard planting would not be a mistake surely.

A Japanese Hybrid Plum.—Mr. O. W. Moore, of Spring Valley, Minn., has fruited for the first time this year a plum grown from pure Japanese seed, which he considers a hybrid. It measures an inch and a quarter by an inch and one-half in diameter, color dark red, skin thin, and quality good, though a little too acid for some tastes. The tree is apparently as hardy as the native plum. Are there not others in the society who are growing and fruiting similar Japanese hybrids.

The Beta Grape.—This variety was originated by Andrew Suelter of Carver, Minnesota—at least this is probably its origin. The variety was lost to cultivation and was discovered by the Horticultural Division of the Experiment Station and brought to public notice. The vine is a vigorous grower and productive. The fruit is inferior in quality but is freely eaten out of hand when thoroughly ripe and where better grapes are not to be found. It is especially productive. This year our large vines growing in the vineyard produced from 40 to 50 lbs. of grapes. Several of them produced about 44 lbs. Its great yield, together with the fact that it is perfectly hardy and does not have to be covered in the winter, makes it very desirable for general use on farms. Prof. Sam'l B. Green.

"The Use of the National Forests."—The Forestry Bureau of the United States Department of Agriculture has issued a small book of forty-two pages, neatly bound with a stiff cover, explaining fully and yet briefly the purpose of the national forest reserves, how and why they were created, what they mean, the purpose to which they might be put, how they are protected, in what manner the wood that grows upon them may be acquired, the methods by which anyone may secure the use of the land for grazing, etc.

The writer has perused this little booklet with much interest and profit, and believes it will be found equally interesting to all who care to inform themselves on this very important national subject. This book contains a list of the various national reservations in the United States, giving a grand total of 153 national forests containing altogether 147,948,685 acres. A copy of this booklet can undoubtedly be obtained without expense by addressing Hon. Gifford Pinchot, Forest Service, Washington, D. C.

Some Minnesota Orchards. The writer during the past few weeks has visited quite a number of Minnesota orchards. They are a beautiful sight to see, exemplifying most satisfactorily the possibilities of orcharding in this region. As I have seen these orchards one after another, it has seemed surprising to me that others who have equally good locations—at least near by these successful orchards—should not have realized their opportunities and have planted similar orchards. Often these orchards stand by themselves in a district apparently devoid of any other extensive interests in orcharding.

One of the most notable of these is the orchard of Mr. Seth H. Kenney on his home farm, six miles northeast of Waterville, an orchard of limited extent, containing perhaps 300 trees, mostly Wealthy, though some are Duchess top-worked with Malinda, and few are of other kinds. The orchard stands on a high northern hillside overlooking a broad valley, and there are plenty of equally good sites close at hand upon which are growing only grain or grass. We found this orchard laden to the ground literally with a bountiful showing of Wealthy apples especially. The Duchess had already been gathered, but the tops of the Duchess trees were carrying a heavy yield of Malinda. I understand that Mr, Kenney had contracted his apple crop to a Minneapolis firm for $3.25 a barrel delivered at the station, and his yield would certainly be over 1000 bushels.

The Lyman orchard, two miles south of Excelsior, is a much more extensive orchard, covering probably upwards of ten acres, and the crop was conservatively estimated at 3,000 bushels. At the time of our visit the fruit that was sent to market was sold at $4 and upward per barrel, commission and freight to be paid out of this. Considerably better than wheat growing, isn't it? This orchard contains a sprinkling of everything of value, the most notable and interesting portion of it being of course the several hundred Wealthy seedling trees, most of which are in bearing, and some of which are of excellent quality. We know of the Evelyn, a seedling from this orchard, and others will undoubtedly be heard from later.

At Mr. Leach's place on Lake Minnewashta, four miles west of Excelsior, we find a very thrifty orchard of moderate extent, but yielding as it has for many years a very profitable crop. A point of special interest to us, though of injury to Mr. Leach, was a fungous growth on the leaves of his old Wealthy trees, which stand near a windbreak of red cedar. These evergreens were full of cedar apples, and their contiguity to the Wealthys was the cause of the disease on the leaves of these trees, which gives promise of being fatal to them. But why is it that other varieties of apples standing in the immediate vicinity are not at all affected? This is a nut for some of our apple growers to crack.

Many other beautiful, thrifty and eminently successful orchards were noted in the vicinity of Lake Minnetonka, which is rapidly becoming an orchard region, but these cannot be spoken of in detail at the present time.

DEATH OF DAVID SECOR.—This much esteemed life member of our society passed away on Sept. 14th last. He had been in feeble health for some years, so that his death was not unexpected. Many of our members had become acquainted with Mr. Secor as a constant attendant at the annual meetings of the society during most of the time since he became a life member, which was in 1901, and prior to that date also an annual member. A more extended obituary notice of this deceased brother will appear in an early issue of our monthly.

DONT FORGET THE ANNUAL MEETING—To be held in Minneapolis at the same place as last year, on Dec. 3-4-5-6. The program, which is now completed and in press, will be sent you about the middle of November. Give it careful examination, and you will find it full of meat from beginning to end. Select those sessions which most appeal to you and then plan to be present at every one of them from the beginning to the close, The opening of our annual meeting is always an impressive hour, and it is especially desirable that every member should be present at 9:45 promptly when this session opens. The closing exercises on Friday afternoon carry with them special interest also. The four days together cement a friendship hard to sever even temporarily, as the parting words of our members clearly indicates. The next number will contain the final remarks of the session of a year ago. They are well worth reading over to get into the spirit of what is before you at the coming annual gathering.

A VALUABLE SEEDLING PLUM.—Samples of what gives promise of being a valuable seedling plum were received in September from Mrs. F. E. Phillips, of Sioux Falls, S. D., who also made an entry of this variety for the Loring prize of $100, offered for a seedling plum of special merit. (See page 280 in the report of 1905.) This plum is described as follows:—Diameter 1 9-16 inches: quality sweet and rich; freestone; color red or dark peach; flesh firm; skin tough and peels well. Mrs. Phillips reports that the tree bearing this fruit was grown from a pit planted by her father fifteen years ago and has endured all weather to even forty degrees below zero without injury whatever. It belongs to the Americana family of plums, or, in other words, is a wild plum. The tree bears heavily annually, usually several bushels, and so heavily that it becomes necessary to support the branches. The accompanying illustration shows a cluster of fruit taken from this tree a year ago.

A cluster of fruit from the seedling plum tree of Mrs. F. E. Phillips, Sioux Falls, S. D.

MR. O. W. MOORE, OF SPRING VALLEY, IN HIS PLUM ORCHARD.

THE MINNESOTA HORTICULTURIST.

VOL. 35. DECEMBER, 1907. No. 12.

EXPERIMENT WORK AT COLLEGEVILLE.

REV. JOHN B. KATZNER, COLLEGEVILLE.

Last winter was rather a severe one and in some respects harder on trees than the preceding one. The temperature in St. Cloud went down to 42° below zero. For four weeks we had a continued cold from 10° to 38° below zero. The weather was so unfavorable last spring that the vegetation was about four weeks behind time. Only on June 12th did the apple trees come into full bloom. The varieties of fruit trees recommended by the Minnesota State Horticultural Society came through the winter in very good condition; they are now growing and doing well.

Some trees, however, suffered badly. I am sorry to state that the Wealthy and Peter grafted on Pyrus baccata, which you sent me a year ago, froze down to the snow line, and one Wealthy and one Hibernal of the twelve trees planted two years ago for the experimental work of the Minnesota State Horticultural Society froze down to the snow line the same way. Two of these twelve trees, one Charlamoff and one Hibernal, showed the first blossoms. Other varieties that were frozen or badly injured are: Russian Borsdorf, Thomson Seedling, Wolf Seedling, Minnetonka, Kaumps Seedling and Red Duck. The cherry trees which had been affected by mildew the last two years are now dead. The other cherry trees suffered some too and showed no blossoms last spring.

We have set out about 100 fruit trees, mostly apples, in part to replace those which were frozen last year. A few hundred grafts of apples, plums, cherries and pears have been set out and are now starting to grow. The pear scions I imported from Germany, but I do not think them hardy enough here. Yet I have to try and see for myself before I accept the common opinion that pears will not succeed in Minnesota. I have been transplanting two seven-foot high black walnut trees, and at present it seems the work has been successful. In July, 1906, I cut off the tap root and laterals on one side, dug out the trees in fall, heeled them in over winter and set them out last spring early. Now

they are growing. I planted a few seedlings of black walnuts, butternuts, Japan walnuts and shellbark hickory nuts. The buckeye chestnut seems to be very hardy here and makes a fine ornamental tree. It ought to be planted more.

We have continued our evergreen planting. Some 5,000 Austrian pine seedlings were set out to give us protection in course of time against the northwest winds and also incidentally for lumber. These seedlings were good strong plants and green all winter. but the continued thawing and freezing in April caused many of them to turn brown. We have several thousand evergreen seedlings of last year's sowing. Some insect or worm is working in the seedbeds, gnawing off the tender roots of these seedlings. What is it, and what can I do against it? Last spring a pound of white pine seed was sown.

The larger evergreens look very nice and healthy, but the sapsucker was very busy last spring to puncture many of the Scotch pine so badly that some trees will die. Some specimens of the European larch, 25 feet high, are a beautiful sight. It is to be regretted that our farmers do not plant more evergreens, as every one could plant a pound of seed and raise all the seedlings he would need for his woodlot. In a few years he would have a fine grove to give shelter to his stock and stead in general and later on have a valuable forest. It seems to me it would be a good thing if the state would enact a law that would require every farmer and land holder to plant on every 160 acres twenty acres of forest trees and exempt said twenty acres of forest so planted for twenty or thirty years from taxation. This would help our forest conditions and general wood supply wonderfully in a few years and would forever keep the much dreaded wood famine from our land.

I have imported some pear seed and have now about 1,500 seedlings growing. The seed comes from very many hardy varieties, the fruit of which is mostly used for cider. Among these seedlings I expect to find some that will stand our climate pretty well. In fact I have two seedlings from a former planting of seed, that came from the same place, which are now six feet high and are hardier than the Russian pears. Although injured some the first years, they came through the last winters all right almost without discolored wood. This fact caused me to import pear scions and seed. If I succeed in finding only one hardy kind, the fruit of which would be among pears only what the crab is among the apple, I would be well satisfied. I

wish I could induce others of our society to get some of that pear seed and try it. I imported the seed from Mr. Fr. Lucas, Reutlingen, Wurtemberg, Germany. Mr. Fr. Lucas has a pomological institute and has about 900 varieties of pears alone in cultivation. So if there is any variety of pear in the world that would produce a hardy seed and tree for Minnesota it ought to be found among the 900 varieties. The seed is very cheap, one kilo of seed with postage will cost only about seventy-five cents, enough seed to start from 3,000 to 5,000 seedlings.

It seems to me that farmers and planters of fruit trees in general make a grave mistake not to order their stock for planting to be delivered in fall. There is more time all round for the nurseryman as well as for the farmer. Stock well heeled in comes out of the winter quarters full of sap and vigor, ready to start into active growth at once. It is my experience for the last fifteen years that such trees will make a growth from six inches to three feet for the first season, when the trees are well pruned at the time of planting. The necessary root pruning should be done in fall and not in spring. Compare such a growth with the growth of the newly set trees the farmers generally get the first season, think of the consequent success in the one and the frequent failures in the other case, and the great advantage of fall delivery is evident. Hence it should be much more practiced by the nurseryman and his customers than it is done at present.

The prevailing conditions and the varied effects of our severe winters produced on fruit trees have modified my views of the same considerably. It seems to be a fact, at least in my mind, that not the cold and the cold alone is responsible for the killing of our fruit trees, but rather the dryness—the dryness in connection with the cold. And this killing effect of the dry cold is intensified greatly by the winter's blasts and blinding storms. As the evaporation is by far greater in a strong current of air in summer, so, too, is the evaporation increased by the winter's storms. The ground is frozen to a great depth, the roots cannot get the required amount of water lost by evaporation, and the poor tree is simply pumped dry of all the moisture. Although a hardy tree that would under normal conditions easily endure the cold of our climate, it cannot successfully combat the deadly effects of the drying cold. This I consider the reason why fruit trees, although coming from as cold or a colder climate than our own—for instance, from Russia or

from Canada or some eastern states—will not succeed in Minnesota. In the East, and likely in Russia, too—of which, however, I am not positive—the climate in general is more humid. There evaporation cannot take place as fast as in Minnesota, and the little moisture the trees lose they are always able to supply. Hence our fruit trees must not only have the power to withstand the cold, but they must likewise have the inherent quality to resist the drying effects of the climate. The Duchess, Hibernal and a few of their seedlings have this inherent quality to resist evaporation in an eminent degree, while hundreds of Russian varieties of apples and pears seem to be deficient in this one particular. The result is that all of them fail in Minnesota. Of course there may be other reasons why they do not succeed well here and in other states, but of these I have no knowledge.

APPLE RUST.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

Recently I visited the orchard of a friend of mine, an orchard I had not seen for seven or eight years. The trees as a whole were healthy and well loaded with fruit, except for a row of Wealthys close to a red cedar hedge, and this was so badly injured by leaf rust that more than half of the foliage had fallen from the trees and that which remained was badly injured and was unsightly, and the crop of fruit from these trees was of little value.

On examining the red cedars I found they were full of the little hard swellings commonly known as "cedar apples." I was sure then that I had found the source of the leaf rust on the Wealthy trees. These trees were shaded by the red cedar and the foliage kept moist most of the day, and even in quite dry weather the foliage did not dry off until late in the forenoon. I found that my friend was not informed as to the close connection between the swellings of the cedar apples on the cedar trees and the leaf rust on the apple trees.

It should be more generally known that wherever leaf rust is found on the apple trees the red cedar must be near by, since the disease cannot live more than one generation upon the apple, and the next generation it must live upon the red cedar. This life history in plants is frequently referred to as "alternation of generation," and it is found in a number of other parasitic plants. Under such conditions the removal of the rust from the apple, or the removal of the apple trees, would undoubtedly result in the removal of the cedar apples from the cedar trees.

My friend is rather loath to cut down his red cedar windbreak and will try to overcome the difficulty by spraying. He has, however, a hard proposition to do so satisfactorily.

THE SQUASH AND ITS CULTURE.

JOHN D. SMITH, AUSTIN.

(So. Minn. Hort. Society.)

I will say at starting that the first requisite is a good seed bed. A sandy loam is preferable if it can be had; if not take such as you have, but a clay or mucky soil with a clayey subsoil does not make an ideal seed bed for squash growing according to my way of thinking, demonstrated by actual experience; a sandy loam with a gravelly subsoil is in my judgment one of the best. I wait until the ground is warm before I prepare my seed bed and do it something like this: I plow the ground from six to eight inches deep after having heavily manured with well rotted manure. Newly broken hazel brush or young timber land if broken deep is fine for squash. If you wish to raise an extra crop as to size, it is well to manure each hill, but if planting on a large scale it means considerable extra work. I prefer to have my squash patch by itself—not planted in with corn or potatoes.

I prepare my hills in this style: I take my hoe and work the ground into a little mound about as large over as a half bushel measure or basket and raised a few inches from the level of the ground, not too high, as I have seen some and had them myself and found they dried out too much after a while. These hills may be four by six, six by six, six by eight or eight by eight feet, according to kind of squash, number of vines left in a hill, or if you wish to raise very large or fair sized ones and so forth. I plant generally four to six feet and leave at last thinning two vines to the hill, which thinning takes place about the time vines commence to run. Don't plant too early. Have ground if possible warm and moist, so they will come up quickly.

My method of planting is somewhat like this: I scatter five or six seeds in center of these prepared raised mounds and gently press into the fine, soft bed with my finger one to one and a half inches deep, as near as I can. I aim to have two to four broods of chickens hatch about two weeks after I plant and set coops on edge of the patch, and by the time the little mischevious striped vine bugs begin to get in their work on the vines the young chicks are large enough to run all over the patch and get in their work of eating Mr. Bugs, and they generally do it to perfection. If for any reason things don't jibe just right, and bugs are doing up my vines, I get up in the morning about 4 to 4:30 and sprinkle them with slug shot, which is a pinkish powder, not injurious to anything as far as I know except almost all kinds of bugs, worms and so forth.

MINNESOTA FORESTRY.

GEN. C. C. ANDREWS, CHIEF FIRE WARDEN.

I am glad to see the veterans of forestry and horticulture here from year to year. I presume one of the things that prejudices forestry especially in the northern part of the state is the apprehension on the part of many people that the forestry people want to create a great, dense wilderness in northern Minnesota. A forest is not a wilderness. The Black Forest of Baden and Wurtemburg is ninety miles long, not quite as far as to Carlton, and only about thirty miles, on an average, in breadth, yet in the midst of that Black Forest live one million people. There is a city in the Black Forest of over six thousand inhabitants. There are railroads running through it and many splendid highways. Pennsylvania has seven hundred thousand acres of forest reserve, but it is in forty different places, in different parts of the state. There is no dense wilderness there. Even our Pillsbury reserve here in Minnesota of one thousand acres is not in one parcel, but it is in three pieces, one and two miles apart. All that forestry wants is just the land that is too hilly or too rocky for agriculture. There are no very great or extensive areas of such land, and we must take it where we find it, a few thousand or a few hundred acres here and there, and it will not be a dense wilderness that obstructs civilization. The people in the northern part of the state want to get that error out of their minds.

One of the things that European forestry does is to protect game. The forester has charge of the game as well as the forest. He is educated, and he is scientifically educated. He knows all about game. He is a skilled marksman, and he is versed in the best ways of destroying noxious animals, such as wolves; and under such methods within a reasonable time forestry in Minnesota will take care of the game as well as the forests. Having a forester will help to destroy the wolves. We pay out in this state twenty thousand dollars a year in bounties for the killing of wolves, which is almost twice as much as the state pays for forest preservation. When we have forestry organized as it ought to be organized the foresters will take care of the wolves, and we shall not need to pay a bounty for their killing.

We have a law on the statute book authorizing the forestry board to buy land for forestry purposes, but not exceeding two hundred and fifty thousand acres of land and not exceeding one-eighth of the area of one town, and one-quarter part of the revenue of that land is always to be given to the town and county in lieu of taxes. That law has been on the statute books for four years, and the state has not appropriated a dollar with which to buy any land. Some six years ago we had a bill passed

to give us some tax-title lands, but it was so circumscribed and amended that it was of comparatively little value in the interests of forestry. An amendment was put in requiring the county commissioners to certify before the forestry board, before the forestry board could get an acre of land, that the land was totally unfit for agricultural purposes. No county commissioners wanted to proclaim that they had any land that was totally unfit for agriculture. We have not been able to obtain any land in consequence, except a few hundred acres in Cook county, and we had to have a petition to obtain that. We ought to have that tax-title law amended.

Then we need a little money to administer the Pillsbury reserve, which was explained to you by Prof. Green. As he has told you, we have a nursery there of about an acre on which are growing some six hundred thousand seedlings. He estimated that about six or seven thousand seedlings, three years old last spring, ought to be planted. Assuming that there are only five hundred thousand, they will cost the state only one mill apiece. That nursery cost the state only $500.00, and we have frames and screens which will last several years. The nursery has cost only five hundred dollars. We must have some ground in which to plant those seedlings. There are enough to plant two hundred and fifty acres, and it will cost ten dollars an acre to plant them, for which all the land is selected and needs only clearing.

Then we ought to have some money to take care of these twenty thousand acres of the Burntside Forest, because, in good faith, we ought to take care of that land.

These are some of the things we want of the next session of the legislature, because forestry cannot make progress without the means to do it—and I wish you to understand that every dollar properly used in forestry means an improvement. It is like putting money in a savings bank, because the experience of every European country that practices forestry is that the income from forests averages three per cent net compound interest annually; and when you put your money into forestry in this state and have invested it, it is as good as government bonds, and you get a return of three per cent compound interest, and you get it when the forest becomes a normal forest. Remember that on this waste land there is hilly, rocky and sandy land—the only land we want for forestry—and the average pine reaches merchantable size not until it is eighty years old. It takes eighty years before you get a forest into normal condition from which you can receive returns. Hence the state must do it, because individuals will not wait so long for returns.

FOREST PRESERVATION.

HON. G. S. IVES, ST. PAUL.

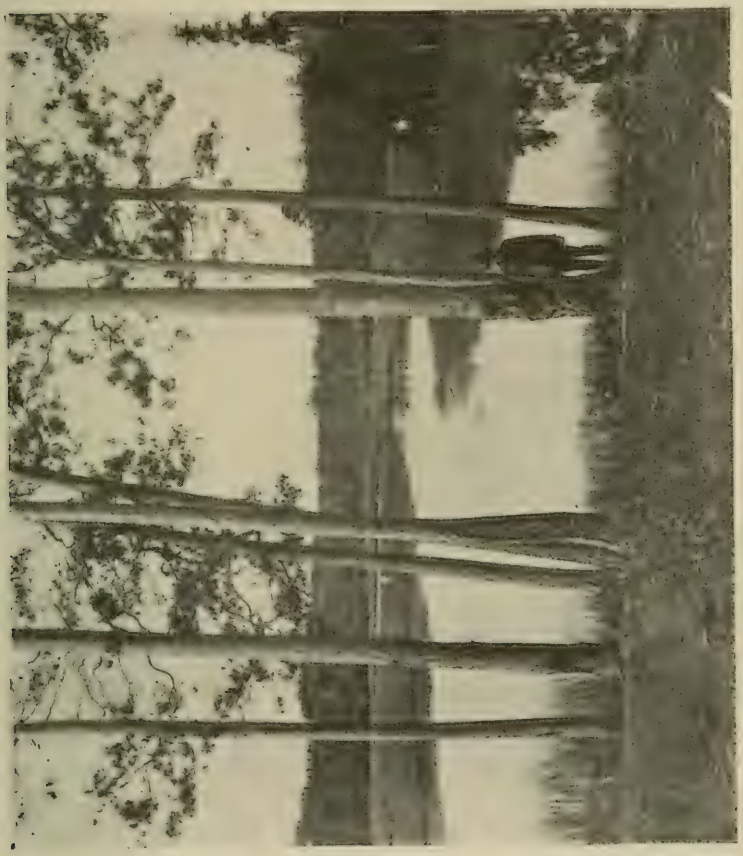
I wish to talk to you a few minutes about the question of the preservation of the headwaters of the Mississippi river and, incidentally, about the importance of that river to the people of this state. I do not think it is necessary to say much to those present to impress them with the idea of the importance of the river to our state. If we took into consideration alone the question of water power that it affords it would be sufficient to warrant us in keeping up the supply as it is at the present time; but in addition to that the question of the navigation of the river as operating upon the rates of freight of the railways that are in existence on each side of the river is very important to these people. The facts are that while on the upper Mississippi there is not very much done in the way of steamboat traffic, yet the fact that this navigable water is open to the gulf has prevented the keeping up of the rates upon freight to a great extent on these railways. Last year when the matter came up before the Board of United States Engineers in considering the subject of reservoirs, this matter was presented by statistics, and it was then shown that the amount that had been saved to the people in this region by reason of the fact of the navigation of the river was enormous. While we cannot use the river to any great extent here, in the lower part of the river they use it a great deal, and I saw some time ago statistics showing that in 1903 there was freight to the value of $24,000,000 carried on the river that year.

In this connection I wish to call attention to the fact that keeping up the navigability of this river is very important in connection with the building of the great canal that is now in process of construction by the United States Government. When this is opened the trade that will be opened up along this river will be of the greatest advantage to us. There is no question about that. But if we should take into consideration the river alone, the fact that this river rises in the northern part of the state and flows almost the entire length of the state, the mere fact that we have this river, is a benefit to the people, and an effort should be made to keep up the supply of water.

I wish to call your attention to this matter of keeping up the water supply of the river. We have a large extent of country up here at the headwaters, that is called the Mississippi Basin, that is used for the purpose of keeping up this water supply. We all realize the necessity of something of this kind. And we all know that the large rivers that flow into the Mississippi and add materially to that supply after the country began to be settled and cultivated

became very much smaller in volume. They furnished a much smaller supply of water than before, and this is getting less and less every year.

Of course within the last few years we have had a great deal of rain, and the conditions are somewhat different than before. This wet cycle that we have now will give place to what we call a dry cycle, and when that comes you will find there will be very



Fire scarred Norway pine on bank of river.

little water in any of these rivers that flow into the Mississippi. Take the Minnesota river today. I have understood from a certain gentleman who is conversant with the history of this country, and also the conditions existing here years ago, that the fact was that not many years ago, and within our own knowledge at one time, the Minnesota River was the main branch of the Mississippi. I think probably there is considerable in that statement, but I have seen the time when there was hardly water enough in the Minnesota

River in many places to float a saw log. The time is coming when this dry cycle will come upon us, and there will not be water enough to furnish a supply to the Mississippi. That is the case with all of the rivers that flow into the Mississippi. The question then turns upon the necessity of keeping a supply of water at the headwaters of the Mississippi.

We have had, I think, five large reservoirs, or dams, built by the Government near some of those large lakes at the headwaters, but these reservoirs have been built largely for the purpose of storing a water supply during dry seasons and through the summer and also for the purpose of regulating the floods during the spring. They regulate the water supply and let the water out at the proper season, and there is no question but that the reservoirs are a great benefit to the country. The report of the engineers upon the water supply in 1896 showed that in St. Paul during that dry period the river went down below the water mark, or what they call zero. With the river at low water mark, or zero, at St. Paul, the supply of water there is about fifteen hundred cubic feet to the second. They then added to that supply about forty-five hundred cubic feet from these reservoirs, which would give about six thousand or more cubic feet of water, which will give two feet more of water in the river than there would be if there were no reservoirs, and while that is not much, yet it makes the river navigable at St. Paul with that amount of water.

I speak of this to show the importance of these reservoirs. These reservoirs are important to a further extent than keeping up the water supply. They flow over considerable land up there, and that land has been acquired by the Government for flowage purposes, and they have to some extent kept up that supply. The great question of the water supply is closely connected with the forestry problem at the headwaters of the Mississippi. I desire to call your attention to this fact, that there are a great number of lakes near the headwaters of the Mississippi, or in this Mississippi Basin. There are a very large number of these lakes that are not meandered. They are small bodies of water, and if this country is settled up and the land is taken up, as most of you are aware, these lakes will further dry up, and even now many of the larger lakes have disappeared. We have quite large lakes that will be useful for the purpose of keeping up this supply.

The main question is the forest area. That is the main question in the keeping up of the water supply. And the question for us to determine is what is the area upon which we can depend at the present time for keeping up the supply of that great river. I think I may call your attention to some statistics on this subject. I made mine just at the time we had a drouth, and at

that time the state had acquired something in the neighborhood of twenty-three thousand acres of land, then most of it cut over. The United States appropriated two hundred and twenty-five thousand acres of land for that purpose. This government appropriation of this land provided that ninety-five per cent of the timber could be taken off this land. I think the probabilities are that the appropriation was not made entirely for the benefit of the river, but for the purpose of keeping this timber on Government land, but it provided that ninety-five per cent of the timber could be taken from the land. The result has been that after the taking off of this ninety-five per cent of the timber, a great portion of this five per cent that is left for the purpose of reforestation, owing to the open condition of the country and the lack of protection from winds, is blown down and lost. The consequence is that we have about two hundred and fifty thousand acres of land, all cut-over land, in that region for the purpose of protecting the headwaters of this great river.

Now, let me call your attention, for the purpose of comparison, to what they have done in New York, for instance, which will give you some idea of what is necessary for the protection of this water supply. In the Adriondacks, in the State of New York, the state provided an appropriation for three million acres of land. Some of the land has been cut over, but a part of it is forest land still, and I understand that nearly all of this three million acres has been acquired for the purpose of protecting the waters of their rivers, and more particularly the Hudson River. We have then in New York three million acres of land reserved in that region for the purpose of protecting the waters of their rivers, and we have for the purpose of protecting the waters of this great Mississippi River, that flows through nine states in the Union, a reservation of two hundred and fifty thousand acres of cut-over land.

This is the situation as it exists at the headwaters of the river at the present time, and it is unnecessary for me to say to you that unless something is done beyond what has been done we will wake up some fine morning and find we have no river. It will not be tomorrow or next year, it may not be while you and I live, but some time, if this condition is not remedied, our river will disappear.

The great difficulty that confronts us and that we should take into consideration is that those people who have settled in that part of the country are interested in its development. They are interested in settling it up and naturally so. They have certain rights which we are bound to protect, and being citizens of this state it is necessary that we should protect them, but there is land there that is of no great benefit for any purpose except to keep up the water supply of the river, and if it is necessary, we ought to get a further appropriation from the state or from the

United States—I think the United States, under the circumstances, since the river flows through so many states in the Union, should take hold of this matter.

There is another feature that we have to take into consideration in this matter. It is very difficult to determine just how much land there is there that can be used for that purpose, how much can be utilized for that purpose, and it seems to me that the first thing to be done would be to ascertain what the true conditions are. We have, it is true, the Surveyor General's office which made a survey of that country, and Gen. Andrews has a great deal of information with reference to it. But it seems to me that the United States Government should take up this matter and appoint a commission to ascertain just what lands could be used or appropriated for that purpose. Such a commission should take plenty of time to investigate and report its findings to the General Government, the true situation as they find it. Then we would have a basis to start upon, and I believe it is due this country, and I believe the legislature can well afford to memorialize congress for the purpose of taking some steps to preserve the headwaters of this river. In the meantime I think additional appropriations should be made by the state for the purpose of reforestation of lands up there and that additional land should be obtained by the state for that purpose, and I believe that efforts should be made to obtain from the United States Government assurance that the reforestation of the land that has been set apart by the Government for this purpose, this two hundred and twenty-five thousand acres, will be done at once. I think the first thing that we should do is to determine just what we want up there, and then we ought to get it. In the limited time given me I cannot go into further details on this question, and I will close by simply saying that I am very much interested in keeping up the water supply of this great river and in the great question of forestry in Minnesota. I believe that the course we have pursued in this state, of cutting off our forests, is one from which we shall suffer very much in the future, and the only thing we can do now to remedy the situation is to put ourselves in a position to improve the conditions which exist at the present time, and the only way to do that is to obtain more land for the purposes of reforestation and to get busy along that line as soon as possible.

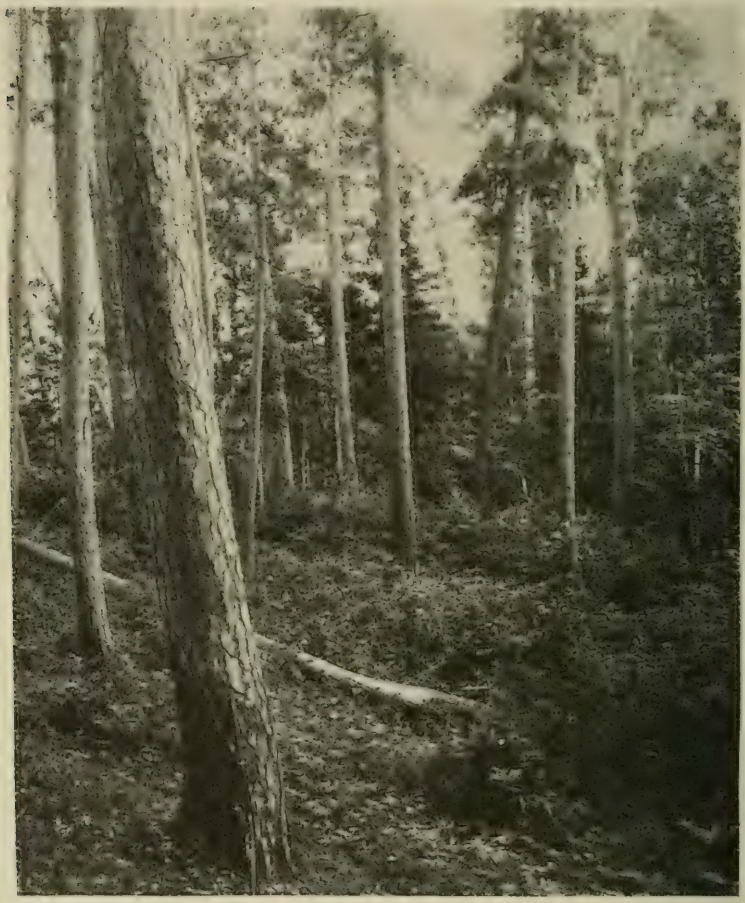
GAME PRESERVATION IN MINNESOTA FORESTS.

HON. W. B. DOUGLAS, ST. PAUL.

In listening to the remarks by Prof. Green on the subject of forestry and having in mind what the president has just said upon that subject, and particularly because of my very tender regard for this Itasca Park, I have been almost tempted to digress from the subject that has been assigned me to discuss for a moment the subject of forestry. I am afraid that would not be tolerated here in the presence of Gen. Andrews and Prof. Green and in the light of what has been said. I cannot refrain from commending substantially all that Prof. Green has said on the subject of the Itasca Park and particularly so with reference to his remarks made concerning game preservation. If I should take up that topic and say all I wish to say in regard to it, with reference to Itasca Park in particular, I do not know where I would end. Some years ago it became my official duty to have something to do with that park and being a hunter by inclination, if not exactly by profession—and sometimes by profession—I took some little interest in the game preservation and we issued some rules, which were somewhat rigid but were strictly enforced with reference to game. A year ago last fall I had an invitation to visit Itasca Park with the governor and the attorney general, and the governor was "joshing" me somewhat with reference to the game that was to be found there and promised in the event that I did not show him some deer to throw me into the lake. The first afternoon Governor Johnson had the pleasure of seeing eleven deer standing in the water and all within a radius of three-fourths of a mile of the Itasca State Park House. It only goes to show that game may be preserved with very little exertion, if the rules are enforced along the proper lines.

This does not belong altogether to the subject I intended to discuss, but a day or two since I read of an occurrence in the life of Judge Lindsey. Judge Lindsey, as you all know, is the originator of the "juvenile court" for looking after neglected and delinquent children. One of the first cases brought before him in the history of that court was a boy who was charged with stealing a few boards, and the contractor from whom they were taken appeared before the judge and testified against the boy. The judge took the case under advisement and walked with the boy to the backyard where he had used the boards. The boy pointed out a house which he had constructed out of some old lumber and with the boards he had taken. The judge said to the boy in the language of the street, "Why did you swipe those boards?" The boy said, "The girls could not make houses with us boys, and we could not have any sand to play in, and I thought

it would do no harm to take a few boards." Judge Lindsey discharged the boy, and while before that contractor had been very urgent in saying that the judge should punish this boy and mete out official justice to him for the trouble he had made, after the boy was discharged the contractor approved the course the judge had taken. The judge suggested to him that the demands of



Showing splendid clear length of pine

nature had been complied with, that there was nothing vicious about this boy, that the boy desired to live in the open and that it was far better to cater to that boy's desires and find some way of bringing him up right than to send him to prison.

It seems to me this explanation was directly in line with the great thought which Lincoln expressed in one of his letters to Stanton when he wrote concerning a boy who had been sleeping

at his post as a soldier and had been sentenced to death. Lincoln sent a note to Stanton saying, "Have you nothing better to do with this boy than to kill him?"

So I imagine we can study the latter instance as well as the former and learn the lesson that out-doors appeals stronger to us all and particularly so to children. It is evident that it appeals to childhood more than to age, and it is very fortunate that out-doors appeals to us so strongly. A thousand and one things suggest themselves to me as to why it is that middle aged men and women fail to appreciate the great out-doors as fully as they ought. The strength of the nation has come from men who have lived out of doors. One of the strongest men we have today, and whom we delight to honor, owes his health and his vigorous strength to the fact that his life has been an out-door life. You horticulturists here can appreciate better than any one else the great advantages of out-door life. We all know that physical, moral and intellectual strength comes largely to those who live out of doors. What does it suggest to us? It suggests that people see the value of this mode of living, and it leads in many instances to the organization of clubs and societies for the purpose of beautifying the parks and grounds and drives and supplying them with flowers and music and other attractions at public expense. Why? Because the congested population of the city does not appeal to the people as the best way of living, and for that reason it is wise to develop our great park systems, and we honor the men who devote their lives to this work.

Parks are the breathing places of the people of our cities, and public money is expended in providing them, and their development should be encouraged for the general welfare of the public at large. If this be true, is it not also true that the preservation of game in our forests would be an appeal to the people to take advantage of the great out-doors, and would it not be wise and proper to take steps to protect and preserve that game for this simple reason, that it has been efficient in luring the people out of doors? From this standpoint why is it not well for us to say that they should be preserved from a public standpoint? If there is one particular thing that leads people into the open it is the existence of game in the forest and in the field and of fish in the rivers. The quest of game and fish was one of the duties, one of the necessities of our ancestors, and I imagine the people of this country are stronger because of it.

Our wild animals must be preserved in the forests, and the fish must be preserved in the lakes to furnish this recreation and also in a measure the food supply. Nature has preserved the deer in the forests that they may assist the pioneers because they are his meat, and while game is not so plentiful as in the early days yet the preservation of what is left is worthy of careful consideration.

What are the conditions in this state with reference to game preservation? I do not think the laws have always been enforced, but they are being enforced today with the utmost vigor —although there are those connected with the enforcement of the laws that are lax in their duties—but the enforcement of these laws is always easier where there is behind it a wholesome public sentiment, and I believe this little gathering I see before me is in sympathy with this proposition.

Who are the enemies of the game laws of this state? I will only take a moment to speak in reference to this point. Antipathy to the game laws is not due to any one particular cause, but it is something that may be expressed in one word, "commercialism." Commercialism has always been in the way of practical game protection. The lumbermen in Minnesota, and not only in Minnesota but in the Adirondacks in New York, have found venison cheaper to buy than to pay for steers or sheep or swine. Only two years ago New York passed a law providing that no game caught in New York be permitted to be sold in New York City unless it came from a distance exceeding two hundred and twenty-five miles. It was a law that ought to have brought the blush of shame to any one who was guilty of assisting in enacting it. It has been changed, but it was during the season when ducks could be slaughtered along the southern coast of North Carolina, and I am told by a gentleman from North Carolina that there were at least two thousand ducks shipped daily that had been shot in the marshes along the coast of North Carolina that went to feed the people of New York, but since the change in the law the ducks have been somewhat on the increase along the eastern coast. The hands of those who are charged with the administration of the game laws should be upheld, and public sentiment should be behind it, and it is something that is worthy of being taken in hand by the general government and should be endorsed. (Applause.)

Prof. C. N. Burkett in his New Book on "Soils" Says—Bear these things in mind. 1. Sand areas, when properly re-enforced with humus, water, and plant food, are peculiarly adapted to all kinds of truck crops. 2. Early truck crops are more safely produced when a maximum of sand and a minimum quantity of clay prevail. 3, General or late truck crops are most safely produced when the sand type carries the minimum of the coarser and the maximum of the finer sand grades. 4. Fruit growing calls for considerable clay as a part of the sand type. 5. The best corn crops are produced where neither sand nor clay predominates—the silt materials producing the best results. 6. The general grain crops are best suited when furnished a silt type of soil. 7. Wheat is most at home in soils where fine silt and clay predominate. 8. Grass fancies most those soils that carry a high percentage of clay. 9. Potatoes perfer a sand type where medium sand prevails, where silt is present in a medium quantity and where clay is present only in moderate quantities. 10. With these special types must be included good tillage, humus, air moisture, and plant food.

AS YOU LIKE IT.

MRS. ESTELLE W. WILCOX, WHITE BEAR LAKE.

May it be "as you like it" today, tomorrow and next day, as you gather the pearls of wisdom dropped from the mouths of the "wise men from the east" and west who have come not to worship but to bring to you thoughts from which you may in your homes during 1907 weave "as you like it" a web of cloth formed of many colors. The fruit lover in his weaving will have the thread of red a ruddier shade as he strives to bring to greater perfection the far-famed Wealthy apple, the luscious Senator Dunlap or Cardinal strawberry, the delicious Loudon raspberry, the tempting North Star and Victoria currants, the superb Wyant and Surprise plums and dainty Delaware grape; while the yellow thread will be brighter in a choicer University apple, with the purple more royal in the fruit of the Columbian raspberry, the white giving a purer Niagara grape, white currant and Pearl gooseberry, and the blue will be deeper in the luscious bunches of Campbell's Early, Concord, Worden and the hardy Beta, with the green thread brightening the completed web in the luxuriant foliage that decks every plant and tree.

The vegetarian, in his weaving, will have as beautiful a fabric, with the thread of green more pronounced in a finer-flavored asparagus, a sweeter pea, a more tender bean and cabbage, a crisper lettuce, a firmer brussels sprouts and a dantier bit of mint and parsley; while it will be gay with threads of red formed by a seedless tomato, a juicier beet, tenderer radish, and onion of less strength; with the yellow thread giving a sweeter-flavored parsnip, squash and carrot; and the purple rich in the thickly hanging egg plant, with the thread of white a tenderer celery, salsify and a mealier potato.

The floriculturist's web will be lovelier than before, as he deftly weaves, mingling in exquisite, heightened beauty the red of the tulip, peony and rose with the yellow thread of narcissus, crysanthemum and golden glow, the delicate pink of the hyacinth, rose and sweet pea, the lavender of the lilac, the dashing blue of the larkspur and iris, and the dazzling white of the lily, phlox, Shasta daisy and snowball—all bordered by the perfumed green thread of mignonette.

Thus the three weavers, Horticulturist, Agriculturist and Floriculturist, will have evolved a more perfected trinity of beauty

and usefulness, and you will have done lovely things—not dreamt them—and thus made of your life a grand, sweet song. For where else save on the life-giving farm, where you are bounded by the blue sky above, the resourceful, fruitful earth beneath and around you nature in all her strength and loveliness, can you more easily do "as you like it?"

MRS. ESTELLE W. WILCOX.

Truthfully says the enraptured Duke in the Forest of Arden:

"Now my co-mates and brothers in exile,
Hath not old custom made this life more sweet
Than that of painted pomp? Are not these woods
More free from peril than the envious court?
Here feel we best the penalty of Adam,
The season's difference, as the icy fang
And churlish chidings of the winter's wind,
Which when it bites and blows upon my body,
Even till I shrink with cold, I smile and say,
This is no flattery, these are my counsellors
That feelingly persuade me what I am.
Sweet are the uses of adversity,
Which like the toad, ugly and venomous,

Wears yet a precious jewel in his head;
And this our life, exempt from the public haunt
Finds tongues in trees, books in the running brooks,
Sermons in stones and good in everything."

Thus from the olden time on to the strenuous now hath nature held out a beckoning hand to the exile, for far down the ages we see the Pilgrim Fathers coming to free America, where, in the forests primeval, they could, "as they liked it," worship God and make for themselves homes. Coming a century nearer, we find our own forefathers in the log cabin making for themselves an abiding place, and even in the hardy life of the pioneers they took from nature her priceless gift and returned even a hundredfold, for every farm home had its orchard, vegetable and flower gardens. Looking backward through memory's pages, I see the long, straight path to grandmother's cabin door, on both sides of which are borders of gay marigolds, larkspur, snap-dragons, hollyhocks, phlox, pinks and sweet-williams, while at one side of the cabin is the herb bed full of something to add to a savory soup or make a tea for the invalid; and on beyond the garden, from which came foundations for dishes even better than "mother makes," and at the other side restfully sit we 'neath the apple trees. "As you like it," they had from stern necessity as well as the inborn love of the beautiful.

Coming to the 20th century we find the pioneers have right royally clothed the prairies of Minnesota. The persistent Peter Gideon believed in doing "as you like it" and labored for nearly half a century, now losing, now gaining, to bring to himself and through himself to Minnesota that coveted "apple of gold." From economical necessity he wore a suit of clothes, not only of many colors but of many patches, that he might buy a bushel of apple seeds from which came the far-famed Wealthy apple. From then till his death he labelled every orchard in Minnesota with the stamp of his patient, untiring zeal and devotion in leaving to the North Star State a bequest, from which the barefooted school boy and the philanthropic millionaire share and share alike.

Another pioneer, John S. Harris, who at the early age of eleven had a nursery and garden of his own, had proved that not anywhere save on the broad acres of the farm do we have the same opportunity and privilege of doing "as we like it;" for he, too, for just half a century, planted and experimented to success, with all kinds of fruit, justly earning a "well done" from every Minnesotan.

Our loved late president, W. W. Pendergast, who may well be called the father of agriculture in Minnesota, did step by step overcome every obstacle, and, "as he liked it," planted, first our agricultural school and then gave to Minnesota a life full of horticultural experiments, having, as he so tersely expressed it, his watchword of progress, "Advance, push on to sublime heights."

Floriculture never had a more devoted, conscientious disciple than that kindly friend in deeds as well as name, R. J. Mendenhall, whose life amid the flowers was truly "as he liked it." Every member of our society would gladly have dropped the honeysuckle spray, symbolical of "generous devoted love" into his grave, feeling he had by his patient master hand grandly won it. Thus many tried and true horticulturists have striven "as they liked it" in nature's garden, running the gauntlet under volleys not of lead but of relentless blight, bitter frosts and rank disease, coming forth victorious.

"With the golden fruitage of success
Dropping at their feet in plenteousness."

Of the today, the revered president, conscientious dean and worthy co-workers of Minnesota's successful experimental farm of widely-famed grounds and fruitful acres, are with heart and hand delving into the unknown, each to his liking, chiseling out steps upon which others shall tread; these in turn will take up the tools and carve out their life work, and with them each of you will be numbered, doing "as you like it" under the broadest environment God can give you, nature's realm. And with heart and mind trained, seeing, searching, unfolding into boundless expansion, knowing that "ideals are like stars—you cannot reach them, but, like the seafaring men on the desert of waters, choose them as your guide and following them reach your destination." And mayhap "on the hardest adamant some footprints of us are stamped in." Even now the shadow of the imprint is creeping near, as our efficient secretary of agriculture, James Wilson, has just given forth the edict of success that has come and will come to scientific agriculture, closing with the prophetic words, "The farmer will not fail the nation if the nation does not fail the farmer."

In this atmosphere of scientific research the wizard Burbank has most successfully won laurels by applying individually our theme, "as you like it," and the cactus, the rose, the sweet pea, the daisy and hosts of other flowers, with the renowned Burbank

potato, have all passed through many transformations beneath his magic wand—while the lamented Carman gave to the world a group of newly-shaped potatoes, evolved in their entirety from his resourceful brain.

Nearer home, the northern wizard, Prof. Hansen, is, "as he likes it," bringing, among other things, hardier perfection to our smaller fruits, and the coming generation will revel in berries that have defied King Winter's blustering blasts.

Far across the waters we find Le Moyne re-creating the beautiful shrubs just "as he likes them." That "grand old man," Gladstone, even in his younger days, was firm in the belief that each for himself must trace and complete the picture on life's moving panorama, and this is the story of his conversion: When a boy he was invited to dine at the home of a famous duke; as this was his first outing among the nobility, his father being very anxious he should appear at his best gave his this parting advice, "Watch the duke and do as he does." The house was reached. Dinner announced and shortly after they were seated at the table the duke turning in his chair blew his nose. Young Gladstone immediately did likewise. This slightly annoyed the duke, but when he gave an order to the butler, and the boyish guest at once duplicated it, this was more than he could bear, and turning to him he demanded why he did the same as he did. With a sinking heart Gladstone answered, repeating to him his father's advice, "Watch the duke and do as he does." In commenting upon it Gladstone says, "I then and there resolved one could not literally follow the doings of great men, and as the years have passed on the conviction of that trying hour have deepened with my growth, and in a broader sense I realize one must for himself study, strive, create, hewing out untrodden pathways."

Thus has it been and ever will be. Success crowns individual effort, the doing "as you like it," and from the environment of nature, wherein the farm home proudly holds sway, have come forth men and women who have dignified every station in life, even to that that is the highest in the gift of the people, for only at the hearthstone of the farm did Abraham Lincoln glean his lessons of success, in after years completely sweeping away the saying of Emerson "that from the farm could not come scholarly wisdom." The ringing master words of the famous Gettysbury address, the solemn admonitions of his second inaugural, that were

fairly burned into the hearts "of the people" and "by the people" will ever be remembered "for the people" long after Emerson's classic words are forgotten.

As it was in the beginning may it be all the days, all the years, of your chosen profession, "as you like it," whether it be agriculture, horticulture, floriculture, home-making or aught else, remembering Lincoln's memorable words, "With malice towards none, with charity for all, with firmness in the right, as God gives us to see the right, let us finish the work we are in and do all which may achieve a lasting peace among ourselves."

TWO MINUTE TALKS.

(Made at close of last annual meeting.)

The President: In this last hour of our annual meeting it has been our custom to call for speeches from some of the older members of the society. It is not a pleasant task for the chairman to pick out those whom he thinks ought to speak, because he would like to call on every individual here, but I have a little list here that I have made up of those on whom I am going to call. We have just about thirty minutes for thirty speeches, and we shall probably have to cut that thirty down to fifteen, and that means two minutes apiece, and if you take more than two minutes you will know that you are taking it from the time of some one else. I am going to call for a two minutes speech from that veteran horticulturist, Mr. Seth Kenny.

Mr. Seth Kenny: I would be glad if I could add anything to the interest of this society with which I have been identified so long. I want to say that I have put in a good deal of hard work in this matter of experimenting to produce hardier varieties of fruits, and I think this work is going to be very greatly developed, and I shall be very happy to think that I have done anything that will be of benefit in that direction. (Applause.)

The President: What we want is just a few pithy words, something that will make us feel that it has been good to be here and that we can take with us when we go home. Next I am going to call on our dear friend from Wisconsin, Mr. Kellogg, who always meets with us in the horticultural society.

Mr. Geo. J. Kellogg (Wis.): Mr. President and Friends: I have been with you more or less for thirty years. I think the records will show that this has been the best meeting I have ever attended. I almost feel as if I belonged in Minnesota. I want to tender you my sincere thanks for the honor in making me an honorary life member, and as I had no chance to express my thanks when it was

done I take this opportunity to thank you. I have been greatly interested in this growing of seedlings. I have grown a great number of varieties of seedlings myself and have turned them over to our state society that they might follow them up and prove their value. I have been saving seeds for many years, and have seeds in my pocket now, and I have apples engaged to take home from this convention from which I shall save the seeds and from the result of which I hope to get that thousand dollar premium. I am just a boy yet, and while I am working with strawberries I am also doing some top-grafting. I have forty varieties on one apple tree, and while I am not doing the work of Burbank,I think it will, perhaps, be as much benefit in our section as that of Burbank. I do not see that Burbank is doing anything for the Northwest. He is working for California and is doing us no good. What we want is something that will benefit our own country. We want every member of this society to help work out these problems. I thank you. (Applause.)

The President: I am next going to call on Mr. C. G. Patten, one of our best friends and one whom we all admire very much. We are very glad to see him here this year, and we want to hear just a few words from him.

Mr. C. G. Patten (Iowa): I am very glad I came to this meeting, and I can assure you that had it not been for the strong desire I had to meet the old horticultural friends in Minnesota I should not have been here, because it was really a very great effort for me to come. But I wanted once more to meet these old friends and renew the associations of former years. I have been greatly pleased in coming to your meetings. When I see those beautiful tables below and remember that at the first meeting of this society the exhibits would not compare with even the small table at the far end of the room, and now you make a display on this side of that small table that is so magnificent—and when I realize what is being done in Minnesota and northern Iowa in the development of horticulture I can scarcely believe my eyes. It does not seem possible that there is such a difference between that time and this time, only twenty to twenty five years ago. (Applause.)

The President: I am now going to call upon a friend whom I do not believe has met with us before, but we are glad to see him and would like to have a few words from him. Mr. S. H. Drum.

Mr. S. H. Drum, Waseca: It gives me a great pleasure to meet here, although this is my first visit. This is the first time that I have had the pleasure of attending your meetings, and I am very much interested. Being only a farmer, I have not had so much experience, but I have raised a few seedlings, and I hope to continue in the work. I have been very much interested in this work ever since I became a member. I thank you for this opportunity of speaking to you.

The President: Next I am going to call on my good friend, Capt. Reed. We have not heard much from him in this meeting.

Capt. A. H. Reed: I think I ought to be congratulated because I have kept my seat and not said much. I told Secretary Latham I had a crow to pick with him because he would not credit our auxiliary members to those fellows who sent in names. I want to give notice that if he does not credit them up this year, I am going to move to take the headquarters down to the new capitol next year. (Laughter and applause.)

The President: Now, we are going to hear from John Cummins. He read a paper here the other day and now we are going to get him up here to make an extemporaneous speech.

Mr. John Cummins: If the president called on me to do some work, I could have done it. I have been a member of this society for fifteen years, but have grown apples since 1858, and will try to do all I can as long as I am able. Now, I hope the president will excuse me.

The President: We did not expect anything longer than that; if any one sits down by the side of you you can talk very entertainingly, but if you stand on your feet you don't feel at home. I am going to call on Nils Anderson. He is a valuable man in our society, but we do not often hear from him.

Mr. Nils Anderson: I have but a few words to say, and it will not take me a great while to say them. I have been a member of this society for quite a few years, but have attended the meetings only two or three times, but it seems now as if nothing could keep me at home after this. (Applause.)

The President: That is a good speech, Mr. Anderson. Now, I am going to call on Mr. Terry. For a number of years he came out to our meetings and took a good deal of interest in them, and we are very glad to see him here again.

Mr. Alfred Terry: I think it was over twenty years ago that I first attended these meetings when they were held in the old Market House. I wish you could have seen my home at that time and see it now. I consider the beauty of my home is largely the product of this association. I always tried to transmit some of the things I was told here to our people in our county, and I am glad to say that there has been a change there. They are growing apples and are improving their homes, and I think it can all be traced to the work of this society. (Applause.)

The President: Now, I am going to call on two or three ladies, and first I am going to call on Mrs. Underwood. She has not spoken at any of the meetings of the horticultural society proper.

Mrs. Anna B. Underwood: I have not had an opportunity to say anything for the reason that the gentlemen monopolized all the time. I am glad that the chairman has given me an opportunity

to tell the members how much good has been accomplished. I can show you that I have been drawn into the Plant Breeders' Association, and I am going home and go to work. I have got two apples—and I notice a young man in front of me signed his name right after mine, and I am going to run a race with him to see which will accomplish the most in the coming years. (Applause.)

The President: Mrs. Sprague has attended our meetings for many years, but I do not think that we have ever heard a word from her. Now, I am going to call on Mrs. Sprague.

Mrs. L. E. P. Sprague: I come to the meetings of this association merely for pleasure. It is a pleasure to listen to these men recounting their experiences and what they have accomplished and are not cast down, whether they meet defeat or success. I am not an apple grower or a fruit grower, but I like to see and hear from others who are engaged in the work. (Applause.)

The President: Miss Cairns, of Wisconsin, has been a regular attendant here for a number of years, and we are always glad to hear a word from her.

Miss Gertrude M. Cairns (Wis.): I am sorry that Prof. Green has the unfortunate habit of calling me up when I am enjoying myself. There is just one thing that is impressed upon me very much. Whenever we meet with a gathering we almost always hear from some of the older people something about the good old times. Now, I have not heard a single word about the good old times at this meeting, but it has all been about the good times that are coming. That is one of the most gratifying things that one can find at a meeting.

The President: I am glad I called Miss Cairns out. She can always make a good speech. Now, there is another lady I am going to call upon, and that is Mrs. Benjamin Hoyt. She always attends our meetings, and we want her to say something to us.

Mrs. B. F. Hoyt: I am very much interested in horticulture, although I am not a member of this society. I have enjoyed this meeting very much and received a great deal of information and a great deal of help, and I hope to be here again next year. (Applause.)

The President: Next I am going to call on Mr. Elliot, without whom our meeting would be like Hamlet with Hamlet left out.

Mr. Wyman Elliot: If I should express how much I have enjoyed this meeting, and tell you of all the good things I have seen and heard, I am afraid I would not get any supper. Going back a little in history, I can remember forty years ago when we organized this society. There was only a little handful of us, and out of that handful there are only two remaining, Mr. Sias (Mr. Sias died a few days previous to this) and myself, and as I look about

and see the gradual increase that has been made since that time and see where we are standing now, it gives me a great deal of pleasure and satisfaction.

While I have been pretty diligent, I can look back and see where I have been very negligent in a great many things. I hope the members here will take it upon themselves to grow seedlings in their immediate neighborhood and report the results to our society. I regret very much that I have come to my present age, because if I could go back and live the last thirty years of my life over again I think I might accomplish something, but as it is I have enlisted to go forward in the work as far as I can and must leave the rest to posterity.

The President: We hope to have Mr. Elliot with us thirty years longer anyway. Now, I am going to call on Mr. Bush.

Mr. A. K. Bush: Fellow members, in soliciting membership, as I have many times for the society, all over the state, in institute work, I have been encouraged by the many good things that have been said of the society, much like that which Mr. Terry has said, and it is a thing which is very gratifying to know that we are doing a work that is benefiting the people of our state. Minnesota horticulture stands in the front rank in this country. (Applause.)

The President: Now I am going to call for a few words from Dr. Whetstone. She is always present at our meetings and seems to enjoy them.

Dr. Mary S. Whetstone: It is a pleasure to me to be a member of a society whose purpose is so high and noble. You are public benefactors and are seeking to make the world happier as well as healthier and wealthier in the art of growing fruit. I was glad yesterday when the resolution was presented looking to the preservation of trees. You know I am interested in the study of mushrooms, but perhaps you do not all care to eat them. But you will probably care to note this fact, that mushrooms that grow on live trees grow at the expense of the life of the tree, and it is due to this fact that when a limb is broken off or cut off, if it has been allowed to decay instead of being protected, the tree will soon be destroyed. The seed of the mushroom is floating in the atmoshphere and will lodge in any place that will afford congenial soil for its growth. When a tree has decayed in a portion of its trunk, or where a limb has been broken or cut away and left a hole and debris has accummulated there, it forms a perfect soil for the propagation of that germ. It shoots down its little mycelia into the wood of the tree, and it is surprising how extensive that will be. There was a tree on Nicollet avenue, on Mr. Reed's place, where there was a large limb broken off by the great storm of a year ago last August, and I was surprised and interested to learn

how extensively the mycelia had entered that tree—six or eight feet, and some of the roots were as large through as a pencil. I never like to see a tree dying. I love a tree, and by putting a little paint over these places where a limb is cut or broken off, the danger of destruction can be avoided.

The President: Next I am going to call on Prof. Blair, from Illinois, who gave us such a nice talk this morning.

Prof. J. C. Blair (Ill.): It has been my good fortune to attend horticultural meetings all over the United States, north, south, east and west, and I want to tell you in all candor I have never visited a horticultural society whose meetings and whose associations I have enjoyed more than I have the visit to these people. I was brought up in horticultural work in the province of Nova Scotia, and then I took up the work of horticulture in New York, and later have been interested in society work elsewhere, and I believe I am qualified to make this statement, that you people here are getting right down to business in the horticultural field in a better and more comprehensive way than any similar organization I know of. What encourages me more than anything else is the fact that, although you have a long program, you have no chaff in it. Every paper and address to which I have listened has been full of meat. You have a corps of officers and workers that cannot be duplicated in any organization in the United States. You have as good a lot of members as I have ever come face to face with in any organization. This is not idle talk, because I am not given to that sort of thing, but I honestly believe the work you are doing cannot be approached anywhere else. I wish you success and Godspeed. (Applause.)

The President: I am sure we are all very glad to have had the privilege of having Prof. Blair with us at this meeting, and I wish to thank him for his kind words of appreciation. We have with us another visitor, from a sister state, from whom we want to hear a few words, and I am going to call on Prof. Emerson, of Nebraska.

Prof. R. A. Emerson (Neb.): I supposed when I came here I was glad to be here because I was here once before, but I am better pleased now than ever. Just before coming up here I was talking with a man, a member of our society, and when he learned I was coming up here he said, "I wish you would find out how they get up such an interest in their society." He had heard reports of your society. If I were to ask any of the fruit growers in any of the adjoining states they would tell me the Minnesota Horticultural Society is the best society in all of the states. However, I am going to try to tell the man how it is done. It seems to me you build up interest here because you have a lot of men and women who are earnest, and you have

come to this place where it is a little harder to grow some things than it is farther south and east—but the harder you try the more enthusiastic you become. I am especially pleased with the establishment of this inner horticultural circle, organized for the purpose of breeding plants, and if there is anything that makes your work a little more pronounced it is this breeding work of your society which makes it different in its work from that of any other society of a similar nature. It is one of the differences which is more prominent. The thing that impresses me with reference to this society is the fact that you are going after what you want, and it seems that you also generally get it. (Applause.)

The President: Mrs. Knowles has been in attendance at several of our meetings, but I don't believe we have heard one word from her, and now I am going to give her a chance to say something.

Mrs. M. A. Knowles: I usually am frightened when I rise to speak before an audience, and I forget what I want to say. Every time I get home from these meetings I am more enthused than ever with the work and the prospects of horticulture. I joined this society a number of years ago, and I intend to work right on as much as I can to help make it a success. I have enjoyed this meeting very much and hope to meet you all again next year. (Applause.)

The President: We have with us this year Mr. Ole J. Hagen, who is an officer of the Red River Valley Horticultural Society. He is a worker, and a few words from him will be very acceptable.

Mr. Ole J. Hagen: I do not think I have much to say because I am not a speaker. This is the first meeting I have ever attended, although I have been a member for a number of years. I wish you could come up where I live to see what I am doing, and also to see me when I am selling fruit. If you could know the results you would be surprised. I have received a very great inspiration from this meeting. (Applause.)

The President: Now I am going to call next on Mrs. A. W. Latham, the wife of the secretary. I do not think she has ever said a word at our meetings.

Mrs. A. W. Latham: I know I have never said anything in the horticultural society meetings. I have not identified myself really with the work, because I have never been especially interested in horticultural work. My idea of the horticulturist and his work is like that of the paper we had last night on the X-ray light, and I think I am capable of speaking upon that point better than any other. I have always enjoyed

attending the sessions, and I am interested in all that is said and done, and I am especially interested in the spirit of friendship and goodfellowship which the members of the society show toward one another. (Applause.)

The President: There is nothing like having a friend at court if you are after something. We are going after something in what we call the chief court down at St. Paul, and we are going to have a friend there in the person of the Hon. Thomas E. Cashman, of Owatonna, senator of his district. His election was a most complimentary one, for although he is a very excellent democrat, he defeated the republican candidate in a strongly republican district, and that speaks well for his standing as a citizen and as a man. We are now going to hear from Senator Cashman. (Applause.)

Hon. Thos. E. Cashman: Mr. President, I am very grateful to you, indeed, for these few words of commendation. I wish to say that this has been a very interesting meeting to me, as all the horticultural meetings have been which I have attended. I am very much indebted to this horticultural society for the valuable lessons I have learned, and when I came to look over this fine collection of seedlings on the lower floor and remember what I had seen at the state fairs during the last four or five years, it lead me to believe that the ideal apple for this cold Northwest will soon be realized. This word "ideal" reminds me of the question once asked by a lecturer who was giving a lecture on the subject of ideal citizenship. He said, "Does any one in this audience know an ideal man?" There was a deep silence. "Does any one know an ideal woman?" "Does any one know an ideal woman?" he repeated. A sweet faced woman got up in the audience and said, "Yes, there was one; I have often heard of her, but she is dead now. She was my husband's first wife." (Laughter.) The thought that prompted this little story is that the men who have brought about these conditions are not getting the encouragement and praise they should have, and it will not be until they have passed from us that they will receive their just reward—that is, the people will not fully appreciate what they have done for us. But I sincerely hope those who are with us, the eminent horticulturists who are doing so much in bringing out new varieties, will live long enough to realize the great hope of their lives. (Applause.)

The President: I noticed this in Cashman's remarks, he was non-committal. That is the sign of a statesman. Now I am going to call on just one more. There are a number more on the list I wanted to call upon, and I will do so if you want to stay here, but it hardly seems as though it would be the proper thing to do. Every whip that is any good has a snapper

at the end of it when it is new to make it crack, and like a whip we want to round out and complete this meeting by putting a cracker at the end of it, and I am going to call upon our good friend here, Mr. Philips, of West Salem, Wisconsin, whom we have had with us for a good many years, and hope he will continue to be with us for many years more.

Mr. A. J. Philips (Wis.): I am going up on the platform because it is an inspiration to stand up here. Mr. Elliot made me think of home. He said he would like to be young again so he could do this work over again. Talking about seedling apples at home the other day I said if I had known thirty years ago what I know today things would have been different. My wife was busy sewing, and she said, "O, yes, you would do just as many fool things as you have done. I don't want to go back and live forty years over with you again." (Laughter.)

I have not said much at this meeting, but I have felt a good deal like the young man told his mother. She said to him, "When you popped the question, what did you say?" He said "I didn't say much, but I kept up a turr'ble thinkin'." I have been doing a lot of thinking at this meeting. I stopped over Sunday with Mr. Yahnke, our dear old friend Yahnke. No better man lives today, and when I left Monday morning, and he turned over in bed and bid me good-bye, he said, "O, I wish I could go with you, but you tell them I wish them success." I could see the tears starting from his eyes, and I was thinking on the way up here that it would not be long before some of the rest of us would be staying at home and wishing we could go. It made me feel rather sad.

I just want to say a word upon the point that Prof. Emerson brought up. I have been asked, just as he has, time and time again, what makes this society so successful, and why it has such good meetings. I always go home feeling better for having been here, and just last week I studied the thing out. They had sense enough—I don't know whether they had that end in view or not— but they put their meetings the next week after Thanksgiving, and if there is any time in the year when a man or woman feels good it is just after Thanksgiving week: and after a good Thanksgiving dinner they come up here, and they feel good all the time, and that is what makes the meetings so successful. I was thinking it over the other day, and I thought I had so much to be thankful for that I concluded to go to church on Thanksgiving day. I don't remember what the text was, but I do remember the Thanksgiving hymn they sang at the close, and I thought it was so appropriate that I read it over a few times and I am going to try to repeat it here. (The President: Why don't you sing it?) I have been attending these meetings for thirty years and have never before been

asked to sing, and I won't sing now. The hymn was so appropriate I thought I would remember it. I will repeat it slowly so you can get the idea all the way through. If I miss a word I don't want you to do as they do at school if a boy can't speak his piece, laugh at him. This is the hymn they sang:

Once more the liberal year laughs out
O'er richer stores than gems or gold;
Once more, with harvest-song and shout,
Is nature's bloodless triumph told.

O, favors every year made new!
O, blessings with the sunshine sent!
The bounty overruns our due,
The fulness shames our discontent.

We shut our eyes, the flowers bloom on;
We murmur, but the corn ears fill;
We choose the shadow, but the sun
That casts it, shines behind us still.

Now let these altars, wreathed with flowers
And piled with fruits, awake again
Thanksgiving for the golden hours,
The early and the latter rain.

I am not going to take up much time. Mr. Cummins said I could have a minute of his time, and any way I am not transgressing, because this is the last number, and you don't have to stay if you don't want to. I was over at the school—and it is always a pleasure to me to go over there. I took Mr. Moyle with me, and I want to say a word about him. He is one of the nicest and pleasantest young men in the state of Wisconsin, and he is doing a wonderful thing, something you can't appreciate unless you have tried it yourself; he is managing a choir of ten young lady singers, and a man who can do that deserves a crown when he gets up yonder. (Laughter.) I took him over there because I thought he would like it there. He has some mighty nice sisters. When I went to Mr. Yahnke's last Sunday morning and saw his four nice girls sitting on the bed and his wife sitting at the foot of the bed, all trying to make it pleasant and comfortable for him—I tell you when I saw that man in his home I envied him. He has a splendid home, and he deserves all he gets. What I was getting at was this: We have so much to be thankful for. I told the young people over there they had reason to be grateful because they were permitted to start out in life in the twentieth century; while we older ones were just stepping over, they were permitted to start out under the most favorable conditions. I told them they were living in one of the finest states in the Union. There is a darky over at the school, but there was no race prejudice apparent any-

where. A nice looking boy sat on one side of him and a girl on the other. Prof. Mayne says he is one of the best students. I said the Ethiopian cannot change his skin, but there is a chance for the Ethiopian to establish a good character in the world. A man doesn't amount to much unless he has character. Some of the worst scoundrels that were turned out in the last ten years were men with a good education, but they lacked character.

You have the largest horticultural society in the United States. Our friend Blair gave you some nice compliments. I always like to hear him compliment anybody, and I like to hear him speak anyway, that Scotch sounds so pleasant when he says he was "oot" there. I have always liked Prof. Blair since I first met him. You have several things in this state that are the best. It has just been decided, and that without argument too, that Minnesota has the best state fair in the United States. Minnesota cleared $75,000, while the next best state cleared only $30,000. Wisconsin, where Kellogg and I live, and where we take away all the money we can in premiums, cleared only $15,000. Another thing you have to be thankful for. The Indians came out here from Carlisle and beat you at football. That is all right, too. The Indians were here before the white men came. The United States has taken care of them and is trying to educate them like white men, and the Indians sâid, as I say here, "You Minnesota people are all right, you are the best people we have ever seen, but you can't play football." I think I have said about all you will stand, and I am just going to say that I thank you for your kindness. (Applause.)

The President: The program says the president shall make some sort of closing remarks. I don't think it is at all necessary, and I am going to call on the secretary.

Secretary Latham: I would like to ask members of the horticultural society who were members in 1867 to stand up. (One rose.) Just one! You can realize a little how I feel in regard to the horticultural society when you see my brother here, the lone representative besides myself of the society as it was in 1867. There are a few others alive that were then members of the society, but not many, and since I have been secretary, fifteen years, the roll of those who have gone to their reward has been constantly growing, and it is always in a sense a sad one to me, because I have had to do with the workers of the society who have helped to make it so successful. There is another thought that comes to me as I look upon the faces that are more or less familiar to me here, and that is that in the large and growing membership of this society there is still room for advancement. I presume no other member of the

society comes in contact with the membership as the secretary necessarily must, and it is a source of pleasure and satisfaction to know that there is so little inclination to shirk any of the duties that come up in connection with this membership, and it is a delight for the secretary to know these people, and if you would like to know the secret of the success of this organization and the strength of its work, you must know that it lies in the loyalty of its membership. A gentleman suggested that if we want to pass a bill through the legislature we should get our membership back of it. I think he knows we have done that. We simply swamped the legislature with correspondence until they cried, "Hold, enough!" I remember they said something of that sort. They said they had heard from their constituents about the matter, and I told them if they had not had enough we would give the screw another turn. The chairman said, "Don't do that, we have not got the money to pay the postage." We have a thousand members upon whom we can call for any service that is right and just, upon whom we can draw for the support of any proper measure, and that is why we feel so sure of ourselves. (Applause.)

MULCH FOR STRAWBERRIES.

(A discussion.)

QUESTION.—"What is the best mulch for strawberries?"

Mr. Wedge: Marsh hay.

Mr. Philips: Mr. Richardson, of Sparta, is here, and he has had great success in growing strawberries. Perhaps he can tell us something on this subject.

Mr. Richardson (Wis.): In our section of country near Sparta, we have had the best success covering with marsh hay. It is the best stuff we have. It is free from foul seeds and makes a very excellent cover. We use rye straw when we cannot get marsh hay, and otherwise we use oat straw. One of our largest growers at Sparta has adopted the method of sowing corn, generally in July, and then cutting it and covering his strawberries with that. He raised this year about twelve acres of strawberries. He will cover about half of those with corn fodder which he sowed in August.

Prof. Green: Did it tassel out?

Mr. Richardson: It did to some extent, but it was rather small.

Prof. Green: Any objection to that?

Mr. Cook: Why not sow it earlier?

Mr. Richardson: It gets too rank, and after it tassels well the bottoms of the leaves begin to wilt and then to drop off. The only objection I can see is that a great many people try to put it on too thick, and if they are not careful they smother the plants, but with us it is considered an excellent covering.

Prof. Green: I think the ideal covering for strawberry plants is cornstalks. Two bundles of cornstalks laid one on each side of the row with another put right on top, makes the finest covering for a strawberry bed that can be found. Where people have lots of that kind of stuff around it is just ideal.

Mr. Husser: How about rats and mice?

Prof. Green: O, you take care of them with a little strychnine scattered about.

Mr. Brackett: Unless you get snow the marsh hay will roll off worse than straw.

Mr. J. F. Benjamin: I use marsh hay and then take a load of manure from the barn and scatter it on to hold it down, and in that way I have no trouble whatever.

Mr. C. J. Hart: I have not covered my strawberries yet, but I have quite a lot of buckwheat. How will that do?

Prof. Green: I am using a little buckwheat straw this year, and am also using about two acres of corn fodder. We have trouble in getting straw, and then there is the trouble with weeds; the land is seeded with weeds.

Mr. Benjamin: Has any one had any experience with bagasse?

Mr. Brackett: I tried that thoroughly. I had a piece of ground in strawberries, part of which I covered with hay, part with straw and the remaining part with cane stalks, and I must say that under my cane stalks I got nearly a third more berries and nicer than with either of the others.

Mr. Geo. J. Kellogg (Wis.): I have had success with bagasse; it makes a very good mulch.

Mr. Seth Kenney: It takes less mulching and stays on very nicely, and the following season it keeps the ground in splendid condition, especially if the ground is a little dry.

Prof. Green: It breaks up and works into the soil.

Mr. Kenney: Yes, it does.

Mr. Philips: I mulch mine with cottonwood leaves and hold them down with straw.

Mr. Husser: Strawy or horse manure is also good stuff.

Prof. Green: If you use stable litter very lightly, it will do very well, but if it is not used with caution it will kill out the vines.

Mr. Richardson: I used the litter, and I had good results from it.

Prof. Green: I knew a man who lost two acres of strawberries by using that stuff; he used too much of it.

Mr. Kenney: I would like to ask if buckwheat straw does not scatter some seeds, so that they will spring up in the strawberry bed.

Prof. Green: That is not a bad weed; it is not like rye, wheat or oats that will come up anywhere.

Mr. Wedge: Still buckwheat straw has a good deal of buckwheat in it and will cause considerable weeding.

PROGRAM 41ST ANNUAL MEETING

Minnesota State Horticultural Society
Held in Minneapolis
Dec. 3, 4, 5, 6, 1907.

ANNOUNCEMENT.

The annual meeting is to occupy the same accommodations in the First Unitarian Church, corner Eighth St. and Mary Place, that have been used now so acceptably for a number of years, the society meeting in the audience room, the fruit exhibit being displayed in the large basement room immediately beneath, with a roomy cloak room situated immediately between the two. There are also in the building convenient committee rooms and a room especially well suited for the uses of the various auxiliary societies. The acoustic properties of the audience room are especially good, which fact, together with the method of seating, commends it as an entirely suitable place for our purpose.

The largest and finest fruit exhibit ever made by the society is assured, and we believe the usual proportion of the display will be seedling apples. Competition in seedling apples is open as heretofore to western Wisconsin, northern Iowa, North and South Dakota and Manitoba. Every member should be sure to bring something as a contribution to this fruit display, which will certainly exceed one thousand plates, that being the approximate amount of display for the last two or three years. See increased premiums on last pages of this program, noting especially the new ones for collections of seedling apples and of apples grown on top-worked trees.

Look at the program and you will have some idea of the feast in store for you. None we have ever issued has contained a greater diversity of topics interspersed with unusual features of special interest. Don't miss the first session on Tuesday morning nor the last session on Friday afternoon, both of which contain material of unusual value. Neither do you want to miss any session that lies between these two, nor the annual banquet of Thursday evening, the crowning event of the meeting.

ANNOUNCEMENT—Continued.

Don't forget to invite your friends to this meeting. Neither forget the wife, who will enjoy an outing and meeting of this kind as well or better than you, as her opportunities for getting away from home are fewer.

HOTEL MAJESTIC IS SOCIETY HEADQUARTERS.

This new concrete, three story hotel is situated on the corner of Hennepin Ave. and Seventh St., with entrance on the Seventh St. side, and only two blocks from our place of meeting. There is a cafe in the building and plenty of other restaurants close by on Hennepin Ave. Rates of $1.00 per day, per room, one in a room, or $1.25 for two in a room, have been secured. Room with bath $1.25, two in a room $2.00. Every room is provided with hot and cold water, telephone, etc.

A double room is also provided at the head of the main staircase on second floor as headquarters of the society, to be used by the members for social purposes. It would be well for members to address the hotel directly and make reservation of rooms as long a time beforehand as possible to make sure of accommodations—always stating when you will arrive and depart.

RAILROAD RATES.

There are no special rates this year, but at the regular rate of 2 cts. per mile the expense of attendance will be less than heretofore, as there will be no 25 ct. charge to pay to secure a return ticket, and all the bother and annoyance connected with the use of certificates is done away with. Simply pay your fare and come and go as you please, and this change from the old practice alone adds much to the comfort and pleasure of attendance.

NOTICE.

Minnesota State Bee-Keeper's Society

Will hold its 2nd annual meeting in the Mayor's Reception Room, at the Court House, Minneapolis, on Wednesday and Thursday, Dec. 4 and 5, 1907. In addition to home talent, there will be present Mr. N. E. France, Manager of the National Bee-Keepers' Association and Wis. State Inspector of Bees, who will present a paper on "Foul Brood."

L. D. LEONARD, Pres.,
63 Syndicate Blk, Minneapolis.

Just as the program goes to press **NOTICE** comes in that **HON. G. B. BRACKETT, U. S. Pomologist,** will be present during the meeting as representative of the **U. S. Dept. of Agriculture. Good!**

PROGRAM.

A TEN MINUTE LIMIT.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to ten minutes, or 1,000 words, except as noted.

TUESDAY MORNING SESSION.

9:45 o'clock.

Every member attending should not fail to be in his seat promptly when this session opens.

Organ Solo .....
Invocation.....Rev. C. S. Harrison, York, Neb.
Song.....Mr. Trafford N. Jayne, Minneapolis
President's Annual Address, Prof. Samuel B. Green, St. Anthony Park.

1. Twenty-Five years in Raspberry Culture in Minnesota. W. J. Hopkins, Bloomington.
2. Strawberry Growing on the Prairie. G. A. Anderson, Renville.
3. Training and Pruning the Currant and Gooseberry. Wyman Elliot, Minneapolis.
4. Shelter Belt for the Farm Home, Orchard and Garden. Wm. A. Buggs, Stockton.

Appointment of committees on credentials, president's address, etc.
Announce exercise in Grafting, etc., at 1:30
Close session at 11:55 o'clock.

All annual memberships expire on the first day of the annual meeting. Renew and become a member by paying the Secretary $1.00.

TUESDAY AFTERNOON SESSION.

1:30 to 2 o'clock.

An exercise in the Art of Grafting and Budding, conducted by Mr. A. R. Kohler, of the State Experiment Station. The actual work will be done with roots, scions, etc., and practical instruction given to those interested.

2 o'clock.

Report of committee on credentials and reception of delegates.

NURSERY TOPICS.

1. Hardy Stocks for Minnesota Nursery Trees. Geo. W. Strand, Taylors Falls.
2. Planting and Early Care of Nursery Stock. D. M. Mitchell, Owatonna.
3. Propagation and Culture of Perennials. C. S. Harrison, York, Neb.

3:15 P. M.

Minnesota Rose Society.

Mrs. H. B. Tillotson, President, in the chair.

1. Opening Address by the President.
2. Some Valuable Biennial Flowers. Mrs. D. W. C. Ruff, St. Paul.
3. Rose Culture for the Minnesotan. Chas. Nordine, Lake City.
4. Border Planting. Theo. Wirth, Supt. Minneapolis City Parks.
5. Winter Protection of Flowering Plants. John Hawkins, Minneapolis.

Appointment of committees on award of premius, obituaries and final resolutions.

Announce Question Exercise at 9:00 o'clock Wednesday morning.

4:30 P. M.

A Twenty Minute Lantern Talk.

How the Hybrid Becomes a Part of Both Parents. Prof. C. P. Bull, St. Anthony Park. Fully Illustrated.

You can become a life member by payment of $10.00 in two annual payments of $5.00 each if you prefer. This will entitle you to a file of our bound reports, a library in itself.

WEDNESDAY MORNING SESSION.

9 to 9:30 o'clock.

Question Hour on "Plums and Cherries." Led by Mr. Dewain Cook, of Jeffers.

Come prepared with a lot of questions to make this a "red hot" exercise.

9:30 o'clock.

Mostly Orcharding—But Not All.

1. Cherry Growing at Homer. J. W. Ramsden, Homer.
2. Shrubs and Trees for Lawn and Park. W. H. Guildford, Dubuque, Ia., Delegate from N. E. Ia. Hort. Socy.
3. Nut Growing in Minnesota. H. S. Fairchild, St. Paul.
4. Progressive Poultry Raising an Adjunct to Horticulture—Illustrated. S. P. Crosby, Braham.
5. The Farmer's Orchard—Fifteen Years' Experience in Central Minnesota. Rev. John B. Katzner, Collegeville.
6. My Commercial Orchard of 1,900 Trees. T. C. Smith, Lakeville.
7. Commercial Orcharding in North Wisconsin. W. S. Hager, Delegate from Wis. Socy., De Pere, Wis.
8. Orcharding on the Dakota Prairie. G. A. Tracy, Pres. S. D. Society, Watertown, S. D.
9. My Plum Orchard of 2,000 Trees. Jas. Elwin, Richfield.

Announce special features of afternoon session.

WEDNESDAY AFTERNOON SESSION.

1:30 to 2 o'clock.

Exercise in Cross-Fertilization of Fruit Flowers. Conducted by Mr. LeRoy Cady, Assistant in Horticulture at the State Experiment Station, using tools, models, etc. Instruction in this important feature of Plant Breeding will be given personally to all interested.

2:00 o'clock.

Memorial Hour. In remembrance of our departed ones. Addresses by A. J. Philips, West Salem, Wis.; S. D. Richardson, Winnebago, and others.

2:15 o'clock.

WOMAN'S AUXILIARY.

Miss Emma V. White, President, in the chair.

(Music for this program furnished by "The Thursday Musical Club," of Minneapolis, Mrs. W. O. Fryberger, Pres.)

1. Home Study for Women. Miss Margaret J. Evans, Northfield.
2. Dress and the Part it Plays in the Home of Average Means. Mrs. Margaret J. Blair, St. Anthony Park.
3. Municipal Improvement. A. P. Pierce, Mayor of Red Wing, Minn.
4. Women's Interest in Forestry. Mrs. W. E. Bramhall, St. Paul.
5. Music as it Applies to Homes in Small Places. Mrs. W. O. Fryberger, Minneapolis.
6. A Third Season in Improvement Work. Mrs. Anna B. Underwood, Lake City.

Announce business meeting of Woman's Auxiliary.

4:15 o'clock.

Native Birds in Their Relation to Horticulture. Illustrated with Beautiful Colored Lantern Pictures. Thos. S. Roberts, M. D., Minneapolis.

THURSDAY MORNING SESSION.

9:00 to 9:30 o'clock.

Question and answer exercise on **"Apple Growing"**—Conducted by Mr. R. A. Schutz, of Leroy. Fire in the questions and make this a lively hour.

9:30 o'clock.

Annual Reports.

Report of Executive Board,
Wyman Elliot, Minneapolis, Chairman
Report of Secretary, A. W. Latham.
Report of Treasurer,
Geo. W. Strand, Taylors Falls.

The Annual Reports here following will be filed for publication without reading, but each officer will be allotted two minutes when presenting his report in which to make oral statement as to features of special interest in connection with the substance of his report.

Reports of Vice-Presidents.
First Cong. Dist., J. W. Ramsden.....Homer
Second Cong. Dist., Wm. Pfaender Jr. New Ulm
Third Cong. Dist., J. M. Walden....Northfield
Fourth Cong. Dist., T. T. Bacheller, Forest Lake
Fifth Cong. Dist., W. S. Higbie....Eden Prairie
Sixth Cong. Dist., Ellsworth Scranton..Montrose
Seventh Cong. Dist., C. J. Orton.....Marietta
Eighth Cong. Dist., L. B. Arnold.....Duluth
Ninth Cong. Dist., Otto Kankel.....Fertile

Reports of Superintendents of Trial Stations.

Prof. S. B. Green (State Experiment Station) St. Anthony Park.
T. E. Cashman, Owatonna.
Dewain Cook, Windom.
A. B. Lyman, Excelsior.
F. I. Harris, La Crescent.
L. R. Moyer, Montevideo.
Mrs. Jennie Stager, Sauk Rapids.
J. S. Parks, Pleasant Mounds.
F. J. Cowles, West Concord.
F. B. McLeran, Wrenshall.
A. H. Reed, Glencoe.

Reports of Auxiliary Societies, viz: Minn. State Bee Keepers' Society; Minn. Rose Society; Woman's Auxiliary; So. Minn. Hort. Society; No. Dakota Hort. Society; Kandiyohi Co. Hort. Society; Red River Valley Hort. Society; etc.

Report of Committee on Ornamental List.

Le Roy Cady, St. Anthony Park.
Mrs. N. S. Sawyer, Excelsior.
Max Pfaender, St. Anthony Park.

THURSDAY AFTERNOON SESSION.

1:30 to 2:00 o'clock.

Exercise in **"Grafting, Budding, etc.,"** conducted by Mr. A. R. Kohler, of the State Experiment Station. Roots, scions, etc., will be used and personal instruction given in the actual work of various kinds of grafting. Take advantage of this opportunity.

2:00 o'clock.

Report of Committee on Fruit List.
J. P. Andrews, G. W. Strand, T. E. Cashman.
Adoption of 1908 Fruit List.

2:30 o'clock.

Annual Election of Officers.

3:00 o'clock.

Minnesota State Forestry Association.

S. M. Owen, President, in the chair.

1. Planting on the Prairie Farm. S. B. Detwiler, State Experiment Station.
2. The Attitude of the Lumberman Towards Forestry. J. E. Rhodes, Minneapolis, Sec'y. No. Pine Mf'rs. Ass'n.
3. Forestry Education. Prof. S. B. Green.
4. Forestry Commercially Considered. Platt B. Walker, Jr. Minneapolis.
5. President's Address. S. M. Owen, Minneapolis.

Report of Secretary E. G. Cheyney, St. Anthony Park.
Election of Officers.
Announce special features of Friday morning session.

4:30 o'clock.

Picturesque Mexico, A Lantern Talk, by P. V. Collins, Minneapolis. You will enjoy this recital of Mr. Collins' second excursion to Mexico, illustrated with many views he secured there.

FRIDAY MORNING SESSION.

9:00 to 9:30 o'clock.

Mr. A. Brackett, of Excelsior, will conduct a question exercise on **"Small Fruits."** Last chance at the meeting on this subject. Make it lively!

9:30 o'clock.

Plant Breeders' Auxiliary.

(Wear the button.)

J. M. Underwood, Pres., in the chair.

1. A Year's Experience in Plant Breeding—a report by the secretary, Clarence Wedge, of Albert Lea.
2. Annual Report of Seedling Committee—J. M. Underwood, Wyman Elliot, Prof. S. B. Green and Dewain Cook.
3. Awards on Seedling Apples at the Meeting, with Exhibit of Varieties—by awarding committee.
4. Fruit-Breeding at the State Experiment Station.—Prof. S. B. Green, Supt.
5. How Members of the Society May Assist the Fruit Breeding Farm.—Chas Haralson, Excelsior, Assistant in Charge of State Fruit Breeding Farm.
6. Breeding New Roses.—John Monson, Florist, Minneapolis.
7. Growing Seedling Strawberries.—H. G. Groat, Anoka.
8. Promising Material for Cross-Breeding Plums and Cherries.—Prof. N. E. Hansen.
9. Lines of Experimentation in Horticulture and Their Practical Application.—Prof. C. B. Waldron.

Are you a member of the Plant Breeders' Auxiliary? If you are growing seedlings and are a member of the Horticultural Society you should join at once. **No expense.** Consult the secretary.

FRIDAY AFTERNOON SESSION.

1:30 to 2:00.

Second exercise in **"Cross-Fertilization,"** by Mr. Le Roy Cady, using models, utensils, etc. Personal instruction. Don't miss this opportunity to learn the art.

2:00.

THREE ORCHARD SYMPOSIUMS.

1. **Treatment of Ground in Adult Orchard. Four Five Minute Papers** by S. H. Kenney, Waterville; H. V. Poore, Bird Island; B. E. St. John, Fairmont; A. Brackett, Excelsior.

Discussion.

2. **Harvesting and Marketing Apples.** Four **Five Minute** Papers by J. P. Andrews, Faribault; J. A. Howard, Hammond; E. C. Warren, Lake City; R. A. Wright, Excelsior.

Discussion.

3. **Spraying the Orchard and Garden. Four Five Minute** Papers by E. F. Pabody, Minneapolis; John Nordine, Lake City; S. R. Spates, Wayzata; Prof. F. L. Washburn, St. Anthony Park.

Discussion.

4 P. M.

Closing Exercises.

Report of committee on final resolutions.

Two-minute speeches by members.

Song by Trafford N. Jayne, Minneapolis.

4:30 P. M.

Closing Remarks by the President. Adjournment.

PREMIUM LIST.

All exhibitors are urgently requested to make their entries with the secretary at least a week before the annual meeting.

All exhibits must be entered with the secretary and in place by noon of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied except where they conflict with this list.

Note specially—Decayed or otherwise imperfect specimens of fruit should not be exhibited. They will not only not be considered in establishing the comparative value of the display, but their presence will detract from the standing of the exhibit.

GRAPES.

	1st. Prem.	2d. Prem.	3d. Prem.	4th. Prem.
Each variety shown.....	.75	.50	.25	....

APPLES.

Each variety included in the 1907 fruit list of the society, or in the 1907 premium list of the Minnesota State Fair	.50	.40	.30	.20
Collection, not to exceed ten varieties	6.00	4.00	2.00	....

Topworked Apples.

Collection of named varieties grown on scions top-grafted on other trees. Accompanying the name of each variety shown, on the same label, must be noted the name of the variety on which it is top-worked. Exhibitors in this class may be called upon to show this fruit before the meeting and relate their experience	8.00	6.00	4.00	2.00

PREMIUM LIST—Continued.

Peck of Wealthy apples, the fruit exhibited to be at the disposal of the meeting	4.00	3.00	2.00	....
Peck of Patten's Greening (same conditions as for peck of Wealthy)	4.00	3.00	2.00	....
Peck of Northwestern Greening (same conditions as for peck of Wealthy)	4.00	3.00	2.00	....

NUTS.

Each variety of edible nuts, 1 quart.....	.50	.40	.30	.20

SEEDLING APPLES.

Five specimens must be furnished of each variety exhibited.

All fruit entered to have been grown by the exhibitor.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

Premiums will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.

Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

EARLY WINTER SEEDLING—The fruit shown must not have been kept in cold storage.
Premium $40.00

LATE WINTER SEEDLING—Same conditions as for early winter seedlings except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter. Premium $75.00

Before payment of premiums awarded on seedling apples, a history and description of the tree and its fruit must be furnished to the secretary.

In each of the above classes the three varieties receiving the three highest awards will be designated as having received the first, second and third premium, respectively.

	1st. Prem.	2d. Prem.	3d. Prem.	4th. Prem.
Collection of Winter Seedlings	$8.00	$6.00	$4.00	$2.00

Secretary's Corner.

LANT PREMIUMS FOR 1908.—The list of plant premiums as revised for 1908 is published on the inside cover of this number of the Magazine and will also appear in the 1908 issues. Always select by number.

DELEGATE TO THE NORTHEASTERN IOWA MEETING.—Mr. H. J. Baldwin, of Northfield, is to represent our society at the annual meeting of the Northeastern Iowa Horticultural Society, which will convene at Independence, Iowa, in Nov. 19-20-21. A report of this meeting from the delegate may be expected in the January number.

DELEGATE FROM NORTHEASTERN IOWA.—The president of the Northeastern Iowa Horticultural Society has appointed as delegate to represent that society at our annual meeting Mr. W. H. Guilford, of Dubuque, Iowa, whom we shall welcome most cordially. We shall hear from him on our program on some topic pertinent to Minnesota horticulture.

ABOUT THE "FRUITMAN."—We note that the practical horticultural monthly published by M. E. Hinkley, at Mt. Vernon, Iowa, has recently united with another horticultural publication, "The Strawberry," at Three Rivers, Mich., doubling the circulation. They are promising an improvement in size and appearance of this monthly, without an increase in the subscription price.

DELEGATE FROM THE SOUTH DAKOTA SOCIETY.—The president of the South Dakota State Horticultual Society, Mr. G. A. Tracy, of Watertown, S. D., is to represent that organization at our coming annual meeting. Mr. Tracy has been a member of the Minnesota society for a great many years, though never before, we believe, in attendance at our meeting. We shall hear from him on the program as to his experience in orcharding at his Dakota home.

AN EXHIBIT OF PATTEN'S CROSS-BRED SEEDLINGS.—We have an assurance from Mr. Chas. G. Patten, of Charles City, Iowa, that he will be present at the annual meeting and make an exhibit of his new cross-bred seedling apples. Mr. Patten has been in attendance at the Jamestown Exposition for some weeks exhibiting this new fruit. This display of new varieties of apples, grown for definite purposes, should be one of the features of special interest at our meeting.

DELEGATE FROM THE IOWA STATE SOCIETY.—Prof. Thomas H. Macbride, of Iowa City, has received the appointment of delegate from the Iowa State Horticultural Society to represent that organization at our annual meeting. Prof. Macbride has charge of the extension work of the Iowa State University, and although the notice of his appointment comes too late to find a place in the pragram, we shall expect to hear from him in some definite way at some convenient time during the meeting.

"THE 'LONDON' WILLOW is a distinct type. In some respect it resembles the 'Golden,' but is a hardier and much more rapid grower. Set in good soil the cuttings—the size of a lead pencil will make good sized fence posts in five

years and would do for that purpose in less time. It succeeds anywhere, even on dry sandy soil, but of course is partial to wet. It is almost entirely unknown, except in this neighborhood, where I have furnished it to neighbors. I got my start from Wm. H. Guilford, of Dubuque, Iowa. This veteran horticulturist speaks very highly of it and also notes its rapid growth and recommends it for planting as a merchantable lumber tree."—E. F. Peck. Austin, Minn.

A Delay in the October Number.—Fires and strikes have been mischievous elements interfering much with the publications of the Horticultural Society this year. A strike in the bindery department at the printers, still continuing, prevented the mailing of the October number until about the 15th of the month, so that this number came to you later in the month than any other issue of our monthly since the magazine was started. We hope for greater promptness hereafter.

Bring Your Friends to the Meeting.—Taking it for granted that you will attend the annual meeting—program of which is now in your hands—why not invite your neighbors and friends to come also? If you need extra copies of the program to use for this purpose, call upon the secretary for them. There is such a diversity of interests represented in this meeting that there must certainly be something of value for every one. Show your program to others and help boom the attendance, which ought this year under all these favorable circumstances to far exceed that of any other the society has held.

New Premiums Offered at the Annual Meeting.—There are three new classes of premiums offered at our coming annual meeting, as will be seen by consulting the program, as follows:

1st. For different varieties of edible nuts—and we hope through this premium to get out a full showing of all varieties of nuts that can be grown in Minnesota.

2nd. Collections of top-worked apples. This will give an opportunity to exhibit many varieties of apples that are grown in this way and not in any other way in Minnesota.

3rd. Collections of winter seedlings. This premium applies to the same territory covered by other premiums offered for seedling apples.

Note This Particularly.—Accompanying the program, now in your hands, will be found a blank form to be filled out by the members. In part it refers to the renewal of membership for the year 1908. There is information other than this, however, asked for on this circular, and it will aid the officers of the society very much in their work if each member will fill out this circular and return it to the secretary promptly, at least before December 1st Whether it is your purpose to renew your annual membership at this time or not, do not defer this important matter. It is a great advantage to know at the opening of the new society year, which begins December 3rd, what members are and what are not to be continued upon the roll. As usual we shall take it for granted that your name is to be so continued, unless you direct otherwise, but it is much better that this fact should be known definitely, as it will be by the return of this circular. Can't you send one new member also for the coming year, which promises to be the richest and most fruitful of any in the development of the work of the society?

JOURNAL OF

Annual Meeting,

Minnesota State Horticultural Society,

DECEMBER 4-6, 1906.

TUESDAY MORNING SESSION.

Following an organ prelude, the fortieth annual meeting of the Minnesota State Horticultural Society was called to order by its president, Mr. Clarence Wedge, of Albert Lea, in the auditorium of the First Unitarian Church, in Minneapolis, at 9:45 o'clock of the morning of December the fourth.

Mr. Trafford N. Jayne then entertained the audience with a vocal selection.

The President: We are fortunate in having with us during this meeting one who was a citizen of our state years before our society was organized. Indeed, I believe at the very birth of our state he was doing missionary work within its boundaries, and has ever since that time been interested in the lines of work we are following. He is now living in a sister state whose conditions are very similar to those obtaining in our state, and he is therefore in a position to sympathize very fully in all of our efforts and in all of our trials and disappointments and also in all of our victories, and it is a great pleasure that we have him here with us this morning. We will now unite with him in asking the divine benediction upon this meeting.

Rev. C. S. Harrison, of York, Neb., then offered the invocation.

The President: We will now take up the regular order of the program, and the first number is the customary address by the president which, with your permission, I will now present.

The "President's Annual Address" was then delivered by Mr. Clarence Wedge, of Albert Lea. (See index.)

Mr. Wyman Elliot: There are a number of recommendations in that address, and I think it would be well to refer it to a committee, and I will make a motion to that effect, that it be referred to a committee to be appointed by the chair.

The motion was duly seconded and, being put to a vote, prevailed unanimously.

The President: The chair will appoint the committee later in the meeting. The next number on our program is an address by Rev. C. S. Harrison, of York, Neb., who will speak upon the topic of the unused capital of farmers and gardeners.

Pursuant to the announcement Rev. C. S. Harrison read a paper upon the subject of "The Farmers' and Gardeners' Unused Capital." (See index.) Discussion.

The President: Allow me to suggest that some of the most valuable matter which we get into the reports of these annual meetings is taken from these discussions, and it is almost impossible for our reporter to get them correctly unless he can hear distinctly what is said. An additional value is lent to the discussion by having the name of the speaker appear in connection with his remarks, and I would urgently request those rising to speak to give their names so the reporter may note them down. He is familiar with the names and voices of most of those present, but there are always members and speakers who are here for the first time. Kindly bear this suggestion in mind.

Our next paper will be read by Prof. Shaw, who will speak about growing small fruits on the farm.

Prof. Thos. Shaw: Mr. Chairman, Ladies and Gentlemen: I scarcely know how, in some unguarded moment, I consented to prepare a paper to be read before the meeting of the Minnesota State Horticultural Society. I do pretend to know something about field crops; I do pretend to know a little about the growing of live stock, but I do not pretend to know very much about the growing of horticultural products. However, I have consented to prepare a paper on the subject of growing small fruits on the farm, and you must take it for what it is worth.

Prof. Shaw then read a paper entitled, "Small Fruits on the Farm." (See index.)

The President: The students of the School of Agriculture find it necessary at this time to take their car. I want to say before they leave that we appreciate their presence here very much and trust that we shall have the pleasure of having them with us again. (Applause.)

We have with us this morning one of our special friends from Wisconsin. I had hardly supposed he had spent half a century in the strawberry field, although I knew it was a good many years. We will now have the pleasure of listening to his paper, which is a relation of his experience of half a century with strawberries. Mr. Kellogg, of Wisconsin.

Mr. Geo. J. Kellogg, of Lake Mills, Wis., then detailed his experience of "A Half Century in the Strawberry Field." (See index.)

Discussion.

The president then announced the following committees:

Credentials: R. A. Wright, G. A. Anderson, F. X. Ferodowil.

President's Address: J. M. Underwood, S. H. Drum, Dewain Cook.

Committee on Awards: Grapes, A. Brackett; apples kept in cold storage, Dewain Cook; apples not kept in cold storage, W. L.

Parker; pecks of apples, O. W. Moore; seedling apples, Wyman Elliot, C. G. Patten, Prof. S. B. Green; canned plums, Mrs. Anna B. Underwood, Mrs. J. O. Weld, Mrs. Mary Knowles.

The President: We have just a few minutes left for the fourth number on our program, and Mr. Chowen will give his experience with four orchards in Minnesota in fifty years.

Mr. W. S. Chowen, of Minnetonka, then spoke briefly of his connection with "Four Minnesota Orchards in Fifty Years." (See index.)

Discussion.

The President: We have over-run the noon hour just about five minutes. Let me call your attention to our meeting this afternoon, which begins at 1:30, which is, perhaps, a little early. The first number is "The question hour," led by Mr. A. K. Bush. You are expected to fire questions at Mr. Bush, which he will answer, or some one in the audience will answer. The understanding is that he will have charge of the half-hour program.

On motion of Mr. Brackett the meeting adjourned.

TUESDAY AFTERNOON SESSION.

(Mr. Bush not being present, Prof. S. B. Green conducted the question hour.)

The President: The time has now arrived for taking up our regular program. I would ask that if there are any delegates present from other states that they present their credentials to Mr. Wright, who will be glad to receive them. The first thing on our program is a paper by Mr. Flagstad, who will speak upon the use of the crab root as a stock for the orchard.

Mr. J. Flagstad, of Sacred Heart, then presented a paper upon the subject of "The Crab Root as a Stock for the Minnesota Orchard." (See index.)

Discussion.

(The above paper was read and the discussion participated in by Rev. J. O. Flagstad, of St. Paul, son of Mr. J. Flagstad.)

The President: This has been a very interesting and profitable discussion, but we have given it all the time we can spare. Our next topic will deal with winter grafting, by Mr. Hawkins.

"Winter Grafting" was the subject of a paper presented by Mr. A. O. Hawkins, of Excelsior. (See index.)

Discussion.

The President: This seems to end the discussion of this subject, and we will now take up the next number, and Mr. Higbie will speak concerning the education of the nursery agent.

Mr. W. S. Higbie, of Eden Prairie, then presented a paper upon the topic, "Educating the Nursery Agent." (See index.)

Discussion.

The President: Our sixth number will treat with the subject of growing pedigree strawberry plants. This will be discussed by Mr. Hoyt.

"The Art of Growing Pedigree Strawberry Plants" was presented in a paper by Mr. Benjamin T. Hoyt, of St. Paul. (See index.)

Discussion.

The President: This has been a very interesting discussion, and I presume it might be prolonged indefinitely, but we must hasten on with our program. Mr. Sherman, of Iowa, will now speak to us upon the growing of hardy ornamental trees and shrubs.

Mr. E. M. Sherman, of Charles City, Iowa, then spoke upon the subject of "Growing Hardy Ornamental Trees and Shrubs." (See index.)

Discussion.

We will now take up the next topic on the program, and Mr. Richardson will tell us how to grow an apple tree.

Mr. S. D. Richardson, of Winnebago City, then read a paper telling "How to Grow an Apple Tree." (See index.)

Discussion.

The President: We will now proceed to the next topic, the propagation of perennial flowers, by Mr. Strand.

"Propagating Perennial Flowers" was the subject treated of in a paper by Mr. Geo. W. Strand, of Taylor's Falls. (See index.)

Discussion.

The President: Before more of the members leave I think it will be well to announce the committees that were appointed this morning, and at the same time I will appoint two additional committees.

The president then announced the committees appointed at the morning session, and also the following:

Committee on Obituary: A. K. Bush, J. F. Benjamin, R. L. Bailiff.

Committee on Final Resolutions: A. B. Lyman, H. W. Shuman, Alfred Terry.

The President: We will now take up the last number on our program, and Mr. St. John will tell us how to renew top-killed trees in the nursery and orchard.

Mr. St. John: This subject has been assigned to me, and I wish to say that I have had but little experience along this line, but I will give you my experience.

Mr. B. E. St. John, of Fairmont, then read a paper on the subject of "Renewing Top-killed Trees in Nursery and Orchard." (See index.)

Discussion.

The President: If the committee on credentials is ready, we will now listen to their report.

Mr. R. A. Wright, the chairman, then submitted the report of the committee on credentials.

Your committee on credentials begs leave to submit the names of the following gentlemen as being duly accredited delegates from their respective organizations:

Mr. W. J. Moyle, Union Grove, Wis., delegate from the Wisconsin State Horticultural Society.

Mr. L. A. Clemons, Storm Lake, Iowa, delegate from the Northwestern Iowa Horticultural Society.

Mr. C. H. True, representing the Northeastern Iowa Horticultural Society.

Mr. J. C. Innes, Luverne, representing the Rock County Horticultural Society.

Mr. J. C. Hawkins, Austin, representing the Southern Minnesota Horticultural Society.

Mr. N. P. O. Synoground, Groton, S. D., president of and representing the South Dakota State Horticultural Society.

Mr. Geo. J. Kellogg, Lake Mills, Wis., delegate at large from Wisconsin and from Lake Mills Horticultural Society.

Mr. A. J. Philips, Salem, Wis., representing the balance of the country.

R. A. WRIGHT,
G. A. ANDERSON,
F. X. FERODOWIL,
Committee.

The President: First on this list we have a gentleman who has already participated to a considerable extent in the deliberations of our society, and I take pleasure in presenting to you Mr. W. J. Moyle, of Union Grove, Wis., representing the Wisconsin Horticultural Society. We would like to have Mr. Moyle come forward and say a few words.

Mr. W. J. Moyle (Wis.): I beg of you at this time not to call on me for an elaborate speech, as the hour is late, and it is not necessary. I will say, however, that I am glad to be here to represent our state society, and I feel, and in fact I know, that I am going to get some good out of the meeting to take back with me to tell to our people at our February meeting, and if I can be of any benefit to you in any way I shall be glad to have you call upon me, and I will render any assistance possible. I thank you for the privilege you have extended to me at this time. (Applause.)

The President: Mr. Moyle comes from the extreme southeastern part of Wisconsin, so we can judge his experience a little better, knowing just what it has been.

We also have with us Mr. L. A. Clemons, of Storm Lake, Iowa, representing the Northwestern Iowa Association. We would be glad to hear from Mr. Clemons now.

Mr. L. C. Clemons (Iowa): I am of a somewhat modest disposition and would prefer not to come forward to the platform. It is with extreme pleasure that I am permitted to meet with you at this time. I have been for about ten years a member of this society, but have never had the pleasure of meeting with you before.

The little society I represent here, young in years and not strong in membership, is enthusiastic and is reaching out for all the information they can get, so they concluded to send me up here,

and when I get back have me tell them what good things you are doing and the good things that were said here, and it is with great pleasure that I am permitted to meet with you at this time. I thank you.

The President: We have also with us another Wisconsin gentleman who is a delegate at large and locally represents the Lake Mills Horticultural Society, Mr. Kellogg.

Mr. Geo. J. Kellogg (Wis.): I don't think it is necessary for me to make a speech. I am too well acquainted here. Philips and I are half brothers, and he does enough talking for both of us, so it is not necessary for me to make a speech. We are not bashful like the gentleman from the southeastern part of the state. He is not married, and has not had the experience we have had. I am glad to be here. I don't think I would have been here if I had not been on the program, and I don't think I should have been here any way if I had not had a daughter living in your city with whom I ate Thanksgiving turkey—and I have been eating turkey ever since. I don't want to say any more, because I will say enough before the close of the session—only this, that I am glad to be with you. (Applause.)

The President: I am sure that we most heartily appreciate the presence of Mr. Kellogg here and would hardly know how to conduct a meeting without him. We have also with us Mr. J. C. Hawkins, of Austin, representing the Southern Minnesota Horticultural Society. Mr. Hawkins, we are always glad to hear a word from you.

Mr. Hawkins: Mr. President, it is quite a privilege to meet with these old war horses, or what is left of them. I have met with you for the last sixteen or eighteen years—at least it is so many years that I have forgotten the exact number—but I always feel as if I were at home when I get here. Our society is in a flourishing condition, and we are going to have an enthusiastic meeting in January, and extend a cordial invitation to as many of you as can attend. Our fruit production and fruit industry in Mower county has doubled and trebled in the last ten years. Somehow, unfortunately, I do not set out as many orchards as Brother Kellogg here. The first one was gone years ago, but the second was a success. Orchards are just coming into bearing with us. I said at one of our meetings at Austin ten years ago that there were men then in the room who would in ten years see apples shipped out of Mower county by the carload. They told me then I was crazy, but they have been shipping them out by the carload for two or three years. Another thing I have said was that when farmers see the money that can be made from orchards, as they make it from hogs and sheep, there will be lots of apples grown in Minnesota. The trouble is not with the tree, but with the man. I want to say another thing: the number of these old gray heads is getting few, and of the faces I met here sixteen years ago there are but very few left. There is another thing here that affords me a great deal of satisfaction, and

that is to see the young men and women in these meetings, which shows the result of our agricultural school training by Prof. Green.

There are many young men here who are growing fruit and flowers, and they do not do it all with their muscle, but they do a great share of it with their brain, and I am glad to see it. I am glad to be with you and hope to take part in the discussions. (Applause.)

The President: Now, we will have the privilege of hearing from a friend whom we are always glad to see at our meeting, whose face we have missed for the past few years, but who is this year a delegate from the Iowa State Society, Mr. Eugene Secor.

Mr. Eugene Secor: Mr. President, Ladies and Gentlemen: I have been delegated to present the greetings of the State Horticultural Society of Iowa to this sister society. Our society is not so strong as yours in numbers. We are a trifle older and perhaps a little too conservative. We have not had quite so many trials, perhaps, to spur us on to do our very best, but the state society of Iowa bids her sister society Godspeed in the transforming the prairies of this northwest into an Eden of beauty and fruitfulness. We are always glad to come up here because we get inspiration from this young giant of the north. It does us good to come into contact with a giant, because it develops our horticultural muscles, and we go back with the ability and determination to do a little better than we ever did before.

I might give you a little something that would be of interest to some of you, a little bit of history. I was reading only a few days ago in the "American Forest" a short biographical sketch of Edward Y. Tees, of Indiana, one of the veteran horticulturists and nurserymen of that state, now seventy-five years old. This report states that Mr. Tees was the first man of this country who ever planted seeds from the catalpa speciosa. This he did in 1844. It also states that from that planting there were shipped to Iowa, to Mr. Seward Foster, of Muscatine, one thousand trees of the catalpa speciosa, and from that planting Mr. Foster became an enthusiastic advocate of the catalpa in Iowa. Forty-four years later, when we dedicated our new capitol in 1884, Mr. Foster furnished the lumber which went into the panel work of one of the rooms, the room which our horticultural society now occupies in the new capitol. The panel work in that room was furnished from Iowa grown catalpa lumber. We extend you a hearty invitation to come down and meet with us and see how we do business in Iowa. (Applause.)

Mr. Seth Kenney: Are there not two kinds of catalpa? I got seed from Mr. Foster a great many years ago, and I have a tree now in my yard that is twenty-five feet high. They have killed back some, but I understand there is another variety besides the one mentioned that is somewhat more hardy.

Mr. Secor: I presume Minnesota is a little out of the proper latitude, and I imagine they will freeze back a little for some years after planting. I live on the very backbone of Iowa on top of

the Wisconsin drifts, one of the highest points in the state, and I have some very nice catalpa trees, perhaps twenty-five years old.

Mr. Crosby: The catalpa is used for railroad ties. Some companies have planted them for that purpose.

The President: We have with us this afternoon Prof. Washburn, and he desires to present to you a matter which, no doubt, will be of great interest to all of you.

Prof. Washburn: What I have to say will probably strike you as very radical. I want encouragement, and I want assistance. The ideas I have on this point were dictated to my stenographer, and I am going to read them to you just as she took them down. Now, if this matter which I have to present seems to you a good plan, we can talk it over between now and the time the legislature meets, and can push it, and if it does not seem wise we can drop it.

Prof. F. L. Washburn, State Entomologist, then sounded a "Note of Warning Regarding Insect Pests."

Discussion.

The President: I would like to ask one question of the members. It occurred to me that possibly those who are pretty well acquainted and the new ones who are here would like to take lunch at a restaurant, perhaps, where there is room to seat twenty or thirty. The usual lunch will be served, and you would pay for what you wanted, and each individual would order just what he would order in a restaurant if he were alone. I suggested that a little while ago to some of the members, and it was thought it would be a good plan to carry out. However, I am going to put it up to you and ask how many would be pleased to eat lunch tomorrow in some restaurant where we could get a small room by ourselves.

On motion of Mr. Elliot the meeting adjourned.

WEDNESDAY MORNING SESSION.

The meeting was called to order at 9:30 o'clock by the president, Mr. Wedge.

The President: The first thing we will take up this morning will be the report of the secretary, Mr. Latham.

Mr. A. W. Latham then submitted the "Annual Report of the Secretary." (See index.)

On motion of Mr. Elliot the report was accepted and placed on file.

The President: We will next listen to the report of the executive board, of which Mr. Elliot is chairman.

Mr. Elliot: Having listened to the report of the secretary, you will find somewhat of a repetition in this report. Great minds are said to run in the same channels sometimes, and this is perhaps why I have some things in my report that appeared in that of the secretary.

The "Report of the Executive Board" was then offered by Mr. Wyman Elliot. (See index.)

On motion of Capt. Reed the report was accepted and ordered placed on file.

The President: The next officer to report will be the treasurer, Mr. Lyman.

Mr. Arthur B. Lyman presented the "Annual Report of the Treasurer." (See index.)

On motion of Mr. Henry Husser the report was adopted and ordered placed on file.

The President: The next matter to be taken up will be the annual reports of the vice-presidents. We will not exactly listen to the formal reports, but they will be filed for publication with the secretary, and we shall hear from each of the vice-presidents as they are called an informal report not to exceed two minutes. As Mr. Cashman of the first congressional district is not present, we will first hear from Mr. Older, of the second congressional district. (See index.)

Discussion.

At this juncture the Bryant Post Quartette very agreeably entertained the audience with several patriotic vocal selections which were heartily applauded.

The President: The next on our program we will hear from the vice-president of the fifth congressional district, Mr. Haggard, since those of the third and fourth are not present. (See index.)

Discussion.

The President: We will now hear from the eighth congressional district, from Mr. Westman, of Sandstone. (See index.)

Discussion.

The President: We will now hear from the representative of the seventh congressional district, Mr. Jacobson. (See index.)

Discussion.

The President: From the ninth congressional district we have Mr. Hagen, of Hendrum. Mr. Hagen represents the extreme northwestern congressional district, I believe. (See index.)

Discussion.

The President: Mr. M. R. Cashman, representing the first district, is now present, and we will listen to his report. (See index.)

Discussion.

The President: I believe this concludes the reports of the vice-presidents, and we will now take up the reports of the superintendents of trial stations. I will ask Mr. Thos. E. Cashman to report for the Owatonna station. (See index.)

Discussion.

The President: We have heard some very valuable advice from Mr. Cashman, which we ought to take to heart. We will next hear from the Excelsior station, which is in charge of Mr. Lyman. (See index.)

The President: The next station to report will be that at Montevideo, which is conducted by Judge Moyer. (See index.)

Discussion.

The President: Captain Reed will now give us a very brief report of the Glencoe trial station. (See index.)

The President: We will now hear from the Windom trial station, which is in charge of Mr. Cook. (See index.)

Discussion.

The President: I wish to introduce Prof. Max Pfaender, who will read a paper on the crossing of fruit flowers. We must get this paper in this morning's program, because it is prefatory to the lesson he is going to give us this afternoon. I consider this one of the rich features of our gathering this winter, that we can have some one here to instruct us and to make it clear and plain to us how we may do hand-pollenization. Although it comes on the first thing this afternoon, I hope Prof. Pfaender will have a full audience of those interested in this important phase of horticulture. I notice by those who come to me and ask information regarding the Plant Breeders' Association that there are an unusually large number of our members who are interested in making hand-crossings. I do not know how much time Prof. Pfaender will require, but it may be we shall have time to have the other two papers read this morning. If not, we will bring them up this afternoon.

Prof. Max Pfaender, of St. Anthony Park, then presented a paper upon the subject of "Crossing Fruit Flowers." (See index.)

The President: We have an abundance of time to take up our other numbers, and we will now take up Mr. Kenney's paper, who will give us some orchard notes.

Mr. Seth H. Kenney, of Waterville, then presented a few "Orchard Notes." (See index.)

Discussion.

The President: I am sorry to stop the proceedings at this time, but I am sure Mr. Kenney will be glad to answer any questions personally. It would seem that Mr. Kenney had done a creditable life work in the building up of the sorghum industry, in which he has been engaged for years, but he has also done good work in horticulture, and it is interesting to listen to his relation of the valuable experiments which he has made and is making.

On motion of Mr. Brackett the meeting adjourned.

WEDNESDAY AFTERNOON SESSION.

The meeting was called to order promptly at two o'clock by the president.

The President: The first thing this afternoon is the report of the committee on fruit list. Prof. Green, the chairman of that committee, will make that report. .....

Prof. S. B. Green then submitted the "Report of the Committee on Fruit List." (See index.)

On motion of Prof. Green the report of the committee was adopted as read.

On motion of Mr. Cook the meeting adjourned.

WOMAN'S AUXILIARY—JOINT SESSION.

The joint session of the Woman's Auxiliary was called together by the president, Miss Emma V. White.

The President: We will dispense for the present with the president's greeting and the report of the secretary, and I will at once introduce Mrs. Mary T. Hoverstad, who will read a paper upon nature study.

Mrs. Mary T. Hoverstad, of Dennison, then read a paper entitled "Nature Study for the Child on the Farm." (See index.)

Discussion.

The President: We have with us this afternoon a lady who is well known to many of you, and I have the pleasure of introducing to you Mrs. E. W. Wilcox, who will now address you.

"As You Like It" was the subject of the address given by Mrs. E. W. Wilcox, of White Bear Lake. (See index.)

The President: Last year Mrs. Underwood told this company some experiences at Lake City in the work with children in the public schools. That was the first year's experience. It is easy sometimes to inaugurate new things, and sometimes the work continues well for some time and then lapses, but Mrs. Underwood is going to tell us about the continuation of the work among the children of the public schools begun last year.

"The Second Season's Work with Children and Flowers" was then related by Mrs. Anna B. Underwood, of Lake City. (See index.)

Discussion.

The President: This has certainly been a very interesting discussion following the valuable paper read by Mrs. Underwood. I hope we may take all that has been said to heart and endeavor in every way possible to put it into practice. We will now have a paper by Miss Sheppard, of the agricultural college, who will speak on the value of fruits in the household.

"The Dietetic Value of Fruits" was then discussed by Miss J. L. Sheppard, of St. Anthony Park. (See index.)

At this point Mr. Wedge assumed the chair and announced the paper by Mr. Henry Husser, it being in line with the papers read and discussed at the meeting of the Woman's Auxiliary.

Mr. Henry Husser, of Minneiska, then read a paper upon the topic, "Interesting the Young in the Home Place and Work." (See index.)

On motion of Mr. Lyman the meeting adjourned.

At the close of this session Prof. F. L. Washburn, of the State Agricultural College, gave a very entertaining lecture illustrated by lantern slides showing a large number of insects injurious to horticulture and their parasites. The lecture which occupied about three-quarters of an hour was well attended and highly appreciated by the audience.

THURSDAY MORNING SESSION.

The meeting was called to order promptly at 9:30 o'clock by the president.

The President: It is very gratifying to see so many members here at so early an hour this morning. I think we are going to have one of the best sessions of the meeting; it is going to be a golden opportunity for discussion, and we want to make the most of it. Let us be prompt and let our questions be such as are germane to the topic under consideration. For instance, when we are speaking about the apple orchard let our questions, as far as practicable, be confined to the apple orchard. When we are on the plum and small fruit garden, let us confine ourselves to that phase of the work. With such a variety of topics as we have before us this morning, there should be no difficulty in interesting all. If any of those who are on the program are not present when their names are called, we will take the next in order and give those who are missed an opportunity later if they appear and there is time. I believe Mr. Schutz is not present, and we will therefore take the next number by Mr. Cook, who will speak on the subject of the plum orchard.

"The Plum Orchard in July and August" was the subject of a paper by Mr. Dewain Cook, of Jeffers. (See index.)

Discussion.

The President: Our next topic deals with the apple in the summer, the care of the trees, and will be considered by Mr. Schutz. Mr. Schutz is one of our representative farmers and is a member of the farmers' institute corps in Minnesota.

"The Apple Orchard in July and August" was then discussed by Mr. R. A. Schutz, of LeRoy. (See index.)

Discussion.

The President: Our next topic has to do with the cherry orchard in July and August. This paper was prepared by Mr. Yahnke, but as he is not able to be present it will be read by his son.

A paper written by Mr. Frank Yahnke, of Winona, on the care of " The Cherry Orchard in July and August" was then read by his son, Mr. Walter Yahnke. (See index.)

Discussion.

The President: We must now cut off the discussion on this interesting topic and take up the next, in which Mr. Moore will deal with the small fruit garden in July and August.

Mr. O. W. Moore, of Spring Valley, then read a paper concerning "The Small Fruit Garden in July and August." (See index.)

Discussion.

The President: Since the committee on credentials made its report we have received the credentials of two more delegates. Prof. R. A. Emerson, of Nebraska University, is a delegate representing the Nebraska State Horticultural Society, and it would be a source of gratification to us if Mr. Emerson would come forward and permit us to become acquainted with him.

Prof. R. A. Emerson (Neb.): I was not expecting to be called upon to say anything, as I am on the program tomorrow. I will simply say that I am glad to be here again. This is the second time I have attended your meetings. Although I have come in late I hope to get a whole lot out of this meeting to take back to Nebraska horticulturists, and I wish to say also that we would be very glad to have any of you that can attend our meeting this winter, which will be held about the middle of January. (Applause.)

The President: We will now take up the fifth topic on our program, which relates to the care of the vineyard in July and August. This subject will be discussed by Mr. Reel.

"The Vineyard in July and August" was the subject of the paper presented by Mr. E. G. E. Reel, of Excelsior. (See index.)

Discussion.

The President: Now we have finished the fruit topics, and we will take up a subject that is equally interesting to many, and that is the vegetable garden in July and August, which will be spoken of by Mr. Baldwin.

Mr. H. J. Baldwin, of Northfield, then read a paper upon the subject of "The Vegetable Garden in July and August." (See index.)

Discussion.

The President: Although this discussion is very interesting, we must cut it short, because we have three more papers on our program. Our next topic will be handled by a gentleman from Iowa who has had a large experience with the subject upon which he is to speak. I wish to introduce Mr. True, of Iowa, who will speak about spraying.

Mr. C. H. True, secretary of the Northeastern Iowa Horticultural Society, of Edgewood, Ia., then detailed in a paper the "Practical Results from Spraying." (See index.)

Discussion.

The President: We now come to the last number on our program, the selection of materials for spraying, by Prof. Snyder. I am very sorry to be compelled to cut off discussion of this last paper. I presume the members can get a great many pointers from Mr. True by going to him personally.

"Selection of Material for Spraying" was spoken of in a paper by Prof. Harry Snyder, of St. Anthony Park. (See index.)

Discussion.

On motion of Mr. Benjamin the meeting adjourned.

THURSDAY AFTERNOON SESSION.

The meeting was called to order at 1:30 o'clock by the president.

The President: This is what we call the "Question Hour," and it was to have been led by Mr. Philips, but as he is not present, I will ask Mr. Kellogg to take charge of the meeting.

(These questions and replies to them appear from time to time throughout the year in our monthly.)

At this point President Wedge assumed the chair and the regular program for the afternoon was taken up.

The President: We have now reached one of the most important subjects of this entire meeting, the consideration of seedling fruits. We will now listen to the report of the committee on seedling fruits, of which Mr. Elliot is chairman. This is certainly a remarkable and interesting collection of apples. They are of fine size and good color, and I hope they are as good inside as they appear to be on the outside.

Mr. Wyman Elliot, as chairman, then submitted the "Report of the Committee on Seedling Fruits." (See index.)

MEMORIAL HOUR.

The President: We will now introduce the Memorial Hour, and will endeavor for a short time to recall the voices and faces of those we have known so long and loved so well and appreciated so much. And in calling to mind their memories we will ask the Honorable S. M. Owen to lead us.

A tribute "In Memoriam" was then offered by Honorable S. M. Owen, of Minneapolis, in memory of the departed members of the year just past. (See index.)

ELECTION OF OFFICERS.

The President: The constitution requires that the president, the executive board and the treasurer shall be elected by a personal ballot. Under that rule the power cannot be delegated to the secretary to elect the officers named by casting his ballot. Furthermore, the qualifications a voter must possess are that he shall have been a member of the society for the last two preceding years and be one also for the current year.

The first vice-president, Mr. M. R. Cashman, was then called to the chair. The chair appointed as tellers Mr. C. H. Andrews and Mr. W. S. Higbie.

The Chairman: Nominations for president are now in order.

Mr. Clarence Wedge: Mr. Chairman and Fellow Members: Four years ago you very greatly surprised and honored me by electing me as your chief executive officer. At that time I said in all sincerity that I could not have been better pleased or more highly honored if I had been elected to any office in the gift of the people of the United States. It suited me exactly so far as the honor was concerned, and I have enjoyed the position to the utmost. Now, I have been with you and served you for four years. I trust they have been profitable years to the society; they certainly have been in membership, and I think to the society in general. I trust I may have contributed somewhat to this growth and prosperity, and if I have been in any way instrumental in promoting the progress and

welfare of this society I shall feel myself fully repaid. But now that I have served you for four years, it seems to me—and I think it will also be apparent to you—that it would be eminently proper for me to step aside and give place to the many other capable ones in the society who can fill the chair. We have but one secretary of the society, but there is any amount of timber for the office of president. As long as Mr. Latham is secretary we can feel pretty well assured that the society will be conducted in a proper manner, no matter who is president. What I have said is simply prefatory to making the nomination I propose to make today. You can guess without saying, indeed I hinted at it at one time, whom I desired to see elevated to this office, and I therefore have the great pleasure and honor of placing in nomination for president of this society Prof. S. B. Green. (Applause.) He has for two seasons taken my place most acceptably. He has been tried. He can do the work, the honor is due him, and I am sure that you will unanimously endorse the nomination of my friend and fellow worker, Samuel B. Green. (Applause.)

Mr. Wyman Elliot: I rise to second that nomination. I have had close connection with Prof. Green in this work for quite a number of years, and I know he is a marvel of energy and foresight. He has carried on our work in whatever position he has been placed with the greatest degree of energy and wisdom, and I shall be glad to welcome him as our chief. I therefore second the nomination.

Mr. S. M. Owen: I am satisfied that it is not necessary to second this nomination, but at the same time I do feel like commending it very highly, and I simply want to say to those who may not know Prof. Green as well as I do, or for as many years as I have known him, that his ability and his capacity in every way fits him for this position, and I want to say to them that there is no man, no member of this society in the state, that is better qualified to fill the position and who more richly deserves it than does Prof. Green. I say this because I do not want the matter to pass. I want to say something of my estimate of the professor. I was afraid he would not know it if I did not say something. (Laughter and applause.)

While the tellers were collecting the ballots further nominations were made of various officers.

Mr. F. X. Ferodowil: I wish to place in nomination for treasurer a man who has made good in this society, a man who is coming right along to the front and a man who is some time going to take a commanding position in the world. I think it is due to the horticultural society that they honor one of their most useful members, and I want to place in nomination for treasurer Mr. Geo. W. Strand.

Mr. H. F. Busse: I have nothing against Mr. Strand, but we have a gentleman who has served us acceptably for a number of years, and I see no reason for making a change, and I would therefore place in nomination Mr. A. B. Lyman.

The ballots for president having been counted, it developed that Prof. Samuel B. Green was the unanimous choice of the society, and he was declared duly elected.

The Chairman: Ladies and gentlemen, I take great pleasure in introducing to you our next president, Prof. S. B. Green. (Applause.)

Prof. S. B. Green: I thank you very much for this manifestation of your confidence in me, and I will try to merit it to the best of my ability. I believe I can do this work to your satisfaction. If I did not, I would not take it, and I believe a man knows if he is big enough for the work he undertakes. I want to say to you that I will do just as well as I know how to make the thing go just as well as I can make it go and make it as near as possible to my ideal. I thank you very much for this honor, because I really esteem it as a great honor. It is not anything that had to be worked up in which there was opposition, but it was a unanimous election, and I feel extremely proud in a modest way to have this office at this time. I thank you again. (Applause.)

As members of the executive board, Messrs Frank Yahnke and Wyman Elliot were placed in nomination for the regular three-year term and Mr. Clarence Wedge to fill the vacancy caused by the elevation of Prof. Green to the office of president.

At this point the retiring president, Mr. Wedge, called to the platform Prof. Green, who assumed the duties of president.

The President: The vice-presidents are all members from the various congressional districts, and this will explain the reason why these are all new men, and unless objection is made, the same course of election will be followed that was followed last year. It is the suggestion again of the executive board that the plan should be carried out again this year.

The ballot for treasurer being announced, Mr. Strand was declared duly elected.

A ballot having been taken for members of the executive board, the nominees named were declared unanimously elected.

Mr. Wyman Elliot placed in nomination the following names for vice-presidents representing their respective congressional districts: 1st, Mr. J. W. Ramsden, Winona; 2nd, Mr. Wm. Pfaender, Jr. New Ulm; 3rd, Mr. J. M. Walden, Northfield; 4th, Mr. T. T. Bacheller, Forest Lake; 5th, Mr. W. S. Higbie, Eden Prairie; 6th, Mr. Ellsworth Scranton, Montrose; 7th, Mr. C. J. Orton, Marietta; 8th, Mr. L. B. Arnold, Duluth; 9th, Mr. Otto Kankel, Fertile.

On motion of Mr. Elliot, carried unanimously, the sercetary was instructed to cast the ballot of the society for the nominees.

Mr. Elliot: It has the usual custom of our society for quite a number of years to recommend for honorable life membership those that have been efficient in the work of the society and of horticulture, and at a meeting of the executive board it was decided that we would thus honor Mr. Frank Yahnke, of Winona; Mr. C. F. Gardner, of Iowa; and Mr. Geo. J. Kellogg, of Wisconsin, and I hereby offer a motion to that effect.

The motion was numerously seconded and being voted upon prevailed unanimously.

Mr. A. J. Philips (Wis): Mr. Chairman: I want to heartily endorse that action with reference to my friend and your friend, Mr. Yahnke. On my way up here I stopped with him last Sunday and found he was sick in bed and could not come. I was very glad to find him as well as he was. Everywhere people are inquiring as to his condition. I am very much gratified at the action of the society in thus honoring Mr. Yahnke. I want to say the same for my friend Kellogg and for Mr. Gardner. I am not so well acquainted with Mr. Gardner, but I know he is a man for whom we all have great respect. Mr. Kellogg was a charter member of the Wisconsin Horticultural Society in 1856 and has been doing good work ever since. I am glad to see all three of these men thus honored.

The President: I know these people are worthy, and I think they appreciate the honor extended. I think this action is especially appropriate in the case of Mr. Yahnke because he is unable to be here.

Mr. Philips: Yes, our friend and brother and co-worker, Mr. Frank Yahnke, is absent from one of the meetings which he always so much enjoyed. We all miss him. We miss his cheery voice, his smiling face and his hearty handshake, and in view of our esteem for him and his enforced absence I wish to move that the secretary be instructed to extend to him in behalf of the society our sincere sympathy in his illness, and also to his wife and beautiful daughter, who are so tenderly caring for him, and that such a message be forwarded at once. The motion was duly seconded and being voted upon unanimously prevailed.

On motion of Mr. Schutz the meeting adjourned.

MINNESOTA STATE FORESTRY ASSOCIATION. JOINT SESSION.

The annual meeting of the Minnesota State Forestry Association was called to order by the president, Mr. C. M. Loring, at three o'clock.

The President: My first duty is to express regret at the absence of three of the speakers this afternoon whose names appear on the program. President Northrup fully intended to be here but found he had an engagement at the university which would detain him this afternoon, although he did not know anything about it until he was ready to come here. Mr. Nelson is out of the city, and Mr. Marshall, who was to represent the United States Forestry Board, is also unable to be present. I think it may be a pleasant matter to you to state that the usual address by the president will not be given at this time. Illness has prevented me from inflicting an address upon you. We have with us always, as you know, Prof. Green, and he has promised to talk to us this afternoon upon needed forestry legislation.

Prof. S. B. Green then addressed the meeting upon the subject of "Needed Forestry Legislation." (See index.)

The President: We have with us this afternoon Judge Douglas, who will talk to us on game preservation in Minnesota forests.

I have great pleasure in introducing to you Judge Douglas.

Judge W. B. Douglas, St. Paul, then delivered an address on the subject of "Game Preservation in Minnesota Forests." (See index.)

The President: There is no doubt but what the preservation of the forests would tend to preserve the game. We have a gentleman with us this afternoon who has been at work a great many years endeavoring to preserve the forests, and we are going to have the pleasure of listening to him for a little while. I have the pleasure of introducing to you Ex-Lieutenant Governor Gideon S. Ives (applause), who will speak on Forest Preservation. (See index.)

The President: The proposition suggested by Gov. Ives should be acted upon. I refer to the appointment of a commission to investigate the condition of the headwaters of the Mississippi. I think it is an extremely valuable suggestion. We have a gentleman with us, Gen. Andrews, whom you all know and whom you have heard before. We would like to hear a few words from Gen. Andrews, and it is a great pleasure to me to introduce him. (See index.)

The President: It has been customary to appoint a nominating committee, and the chair will appoint Mr. Andrews and Prof. Green.

Mr. J. M. Underwood: I have a resolution which I wish to offer at this meeting. While we are seeking to encourage tree planting and reforestation of the waste lands of the state there is another question of vital importance to the forests of the state, and to the horticulture of the state, which we should consider, and that is to protect ourselves from some of the insect pests that may possibly be brought to the state and become a source of injury, and I therefore wish to offer the following resolution and make a motion for its adoption.

"Resolved, That, in view of the necessity of educating our young people and citizens generally as to the appearance of such principal insect pests of forest, shade and fruit trees, which at times threaten them and which have caused and are causing losses amounting to hundreds of thousands of dollars in some of the states, it is the sentiment of members of the state horticultural society and the state forestry association assembled in their fortieth annual meeting, that the state entomologist should be granted an appropriation for having prepared and distributed in Minnesota schools colored charts illustrating such pests and with descriptive texts."

I hardly think we have time to give this matter extended consideration, but it seems to me it must be evident to all that it is a meritorious proposition, and I believe we can pass this resolution without any serious objection.

The President: This is a very important matter, and it really ought to be considered more fully.

Mr. Latham: I agree with the president that this is a most important matter and should receive more careful consideration than it would if it were passed at this meeting. And I move that this matter be referred to the executive board of the horticultural society for further consideration with power to act in the premises.

The motion was duly seconded and, being put to vote, prevailed unanimously.

The President: We have a forestry board in the state of Minnesota and a forestry association in the state of Minnesota, and one of the duties of the forestry association is to help the state board, but the forestry association has another duty and that is to encourage the planting of small forests and wood lots on the farms, and to encourage the planting of trees along the roadways and the streets of villages. I think there has been such a great improvement in that respect in the last ten years that the face of the country has been almost entirely changed, especially in the more thickly settled portions. I hope when the members of this association go to their respective homes that they will make an effort to organize, or reorganize, their improvement associations and agitate the planting of trees on the roadways and endeavor to make our state what it once was before the hand of man took the ax and destroyed it, the most beautiful state of the Union.

Prof. Green: It is required that the forestry association nominate one member to the governor, whom he may appoint as a member of the State Forest Reserve Board. The position is now occupied by Hon. S. M. Owens, and I move that he be nominated to the governor for the ensuing term, which will begin next January.

The motion was seconded, and being voted upon, prevailed unanimously.

Prof. Green: This resolution is submitted by Mr. Frank Gibbs. He asked me to offer it because he is too modest.

"Resolved, That it is the sense of the members of this society that the protection of the game of the state will strongly promote the public welfare, and we pledge our earnest assistance to the executive officers of the state in the matter of enforcing the game laws."

On motion of Prof. Green the resolution was unanimously adopted.

The election of officers was then held with the following results.

President, Hon. S. M. Owen; vice-president, Prof. T. L. Haecker; secretary, Mrs. Lydia Phillips Williams; treasurer, Mrs. W. F. Graves; executive committee, Wyman Elliot, A. W. Latham, Prof. S. B. Green, A. K. Bush and Clarence Wedge.

The President: I wish to say to the association that I was on account of poor health entirely unable to write an address, and I wish to ask as a congressman does "leave to print." I think it will do fully as much good in a magazine as though you heard it here.

Prof. Green: The committee on nominations was very anxious

to again nominate Mr. Loring as President, and it is only on account of his earnest insistence that he could not take the office that he was not nominated for president.

Mrs. Williams (Sec.): You have just heard it stated by Prof. Green that Mr. Gibbs is too modest to offer his resolution, and as Prof. Green was too modest to offer the following "forestry resolutions" I take the liberty to do so.

WHEREAS, The Morris Act of 1902 failed to definitely fix the boundary lines of the Minnesota Chippewa Reserve or provide for the payment to the Indians for the land and 5 per cent of seed trees taken for the reserve therefore,

Resolved, That the Minnesota Forestry Association hereby petition congress to pass the Tawney Bill—H. R. 20046, which provides for the omissions above referred to—said bill having already received the indorsement of the Minnesota delegation.

WHEREAS, The occupation by settlement and outside interests of the state swamp lands within the proposed boundary line of H. R. 20046 will be a menace to the best interests of the forest reserve and the future interests of the state in this forest area—

Resolved, That the Minnesota Forestry Association urge the Minnesota Legislature to empower the governor of Minnesota, after the state shall have removed ninety per cent of the pine timber on that part of the "swamp lands" which were classified as pine before the swamp land selection, to request congress to exchange such lands for other lands of equal value from the pubic domain provided such exchange can be made without detriment to the state school funds.

On motion of Mrs. Williams the resolutions were unanimously adopted.

On motion of Prof. Green the meeting adjourned.

FRIDAY MORNING SESSION.

The meeting was called to order at nine-thirty o'clock by the President, Prof. S. B. Green.

The President: There are quite a number whose names appear on the program who are not present this morning, and we will therefore not follow the regular order but will call on those who are present. The first paper will be by a man from whom we never hear very much, but who knows a great deal if he would only tell it, and that is Mr. J. R. Cummins.

Mr. J. R. Cummins, of Eden Prairie, than read a paper entitled "Horticultural Notes." (See index.)

Discussion.

The President: We will now call for the paper by Mr. John S. Hughes. The paper is on the subject of growing vegetables for canning purposes. As Mr. Hughes is sick and unable to be here, Prof. Bull has kindly consented to read it for him. Mr. Hughes has had a great deal to do with the promotion of a number of canneries in the state and is well prepared to speak on this subject.

"Growing Garden Products for Canning Purposes" was the subject of a paper prepared by Mr. John S. Hughes, of Minneapolis, and read by Prof. Bull. (See index.)

Discussion.

The President: While we are on the subject of vegetables I am going to call for the paper by Mr. W. J. Moyle, of Wisconsin. His subject relates to the cabbage industry in southeastern Wisconsin.

Mr. W. J. Moyle, of Union Grove, Wis., then read a paper describing the "Cabbage Industry in Southeastern Wisconsin." (See index.)

Discussion.

The President: Next on our program we will call on Mr. E. A. Smith, who is going to tell us what killed hardy stock last winter.

Mr. E. A. Smith, of Lake City, in a paper then detailed his opinion of "What Killed Hardy Stock Last Winter." (See index.)

Discussion.

The President: I now wish to call upon two representatives of horticulture to come before us just a moment to see who they are. I am going first to call on Prof. Waldron, who is professor of horticulture in the University of North Dakota. Will you not come forward, Professor, and give us a word of greeting from North Dakota?

Prof. C. B. Waldron (N. D.): I just want to say good morning to you and to say that I am sorry I could not be with you earlier, but I was called to Chicago on some business and failed to make connections, so I was detained until this morning. I have been at every meeting of this society, with the exception of one or two, since I have been in the northwest, which is sixteen years. Our work is progressing after a fashion, more or less spasmodically, in the northwest. We expect next year to have some large greenhouses established at Fargo, so that some of our work in plant breeding and things of that nature may be carried on more systematically than at the present time. I have been in Chicago for the last three or four days consulting with builders of greenhouses, and perhaps we can forward our horticulture with such an equipment better than with what we have at the present time. We have planted in the state of North Dakota some eighteen thousand forest trees, and planted a large number of different varieties of fruit trees. We have now an experiment station at Edgely, N. D., in the southern part of the state. We also have a tree plantation and a fruit plantatin at Dickinson, on the Little Missouri. They are beating us out. Most trees, especially fruit trees, somehow are doing better at Edgely than at Fargo. You are not specially interested in these extreme points, but I just mention this to let you know what progress we are making and how we are developing. (Applause.)

The President: We are fortunate this morning in having Prof. J. C. Blair with us, who is professor of horticulture in the University

of Illinois. He has a talk to give us on the subject of cold storage, but first we would like to have him say a word or two of greeting, and at the close he can take up the work of cold storage.

Prof. J. C. Blair, (Ill): Ladies and Gentlemen and Members of the Minnesota Horticultural Society: I can assure you it is a great pleasure to me to be with you and listen to your discussions this morning. I had promised myself a year ago the pleasure of meeting the Minnesota Horticultural Society, but when I got to Chicago I found I could not make train connections which would permit me to get to your meeting in time. So it is a peculiar pleasure to me to come at this time, although it seemed I would not be able to be here as early as I expected to. I see from the splendid exhibit of apples down stairs and your discussion here that you are a live, wide awake horticultural people. You have problems which differ in many respects from those we have in Illinois and yet you are handling them, it seems to me, in an excellent way, and with the work of this organization, banded together with the various auxiliaries, coupled with the work of the state university and experiment stations, you are bound to astonish the world in years to come with things that you will do.

Now, in regard to arbor vitae, it is a fact that every eight or twelve years they are badly injured by winter conditions in Illinois. I remember in the spring of 1899 after that hard freeze most of our arbor vitae were killed. The fall was very dry, the summer was very dry, and the winter did not come on until very late. The temperature was very high for that season, and when the winter came there was a low drop of the temperature, and it seemed as though most of the arbor vitae through Central Illinois were killed as a result of that condition.

I am glad to bring greetings to you from the sister state of Illinois and from our own horticultural society, and I hope it will be possible for some of you to meet with our society this year. We had a representative from your society, Mr. Underwood, with us last year, and we enjoyed his talks and his presence immensely, and if you cannot send Mr. Underwood to our next meeting, I hope you will send some one else.

When I stepped off the train last night at midnight and got a whiff of your atmosphere, I thought, why should I make this trip from Illinois up here to talk cold storage to you? Day before yesterday I talked to the Indiana Horticultural Society and left at midnight. The temperature was 64 degrees. There was a rain pouring down heavily, with a spring-like atmosphere, and when I got to Minneapolis last night the temperature was ten below. I could see some justice in my trip to Indiana, but I cannot see why on earth I had to come up here. (Laughter.)

On motion of Mr. Smith the meeting adjourned.

FRIDAY AFTERNOON SESSION.

PLANT BREEDERS' AUXILIARY—JOINT SESSION.

The second annual meeting of the Plant Breeders' Auxiliary of the Horticultural Society was called to order by the president, Mr. J. M. Underwood, at two o'clock.

The first number on the program was the "President's Address" delivered by Mr. J. M. Underwood, of Lake City. (See index.)

The President: We have a program this afternoon which we intend to follow out, and the first thing I am going to call for is the report of the secretary, Mr. Clarence Wedge.

Mr. Clarence Wedge, of Albert Lea, then submitted the "Report of the Secretary." (See index.)

The President: I am glad the report of the secretary is so complete and especially as it is a record so much better than I ever dreamed of, since I thought it was practically impossible at this time to make so detailed and interesting a report. It is a great source of gratification to me that we have accomplished so much this year. I know it must appear to you, as it does to me, necessary to have some method by which we can get at this work, that we may have a record that is of some value. I have been working as hard as I could for nearly forty years in Minnesota, but never with a definite purpose in such a way as this. There was no record kept of anything we were doing. We have been going every man for himself, but no one in any particular, methodical way. It seems after all these years we have just got on the right track and are beginning to keep a systematic record of everything we do.

The next number on the program will treat of the subject of "breeding for hardiness," by Prof. Andrew Boss. As you will understand, Prof. Boss is a man who has given his best attention to animal breeding. I know he is particularly successful and intelligent along the line of animal breeding, and it is gratifying to know that he has something to say in relation to breeding for hardiness in plants. (See index.)

Discussion.

The President: We will now listen to a paper along this same line by a man who is thoroughly competent to speak upon the subject, and this paper has been prepared by Mr. Patten, of Iowa, whom we are glad to have with us and from whom we always gain a good deal of information.

"Can We Breed Hardiness in our Trees and Plants?" was the subject of the paper read by Mr. Chas. G. Patten, of Charles City, Iowa. (See index.)

Discussion.

The President: Now, right along this same line that we have had under consideration here we have another paper by a man who has given this subject special study and thought, and he will speak

upon "Early Maturity and Hardiness of Trees." I take great pleasure in introducing to you Prof. R. A. Emerson, who is the professor of horticulture of the University of Nebraska. (Applause.) (See index.)

Discussion.

The President: Our next subject will be a history of plant breeding at the State Experiment Station, and Prof. Green will tell us what they have accomplished there.

Prof. S. B. Green then detailed the experiments in "Plant Breeding at the State Experiment Station." (See index.)

The President: Mr. Elliot, of the executive board, has now an important matter which he wishes to present to the auxiliary in regard to "Legislation for Fruit Breeding." (See index.)

A vote was then taken, and the motion prevailed unanimously by a rising vote.

Mr. Elliot: I am indebted to my friend Philips for this specimen (exhibiting an apple). He sent an apple to me and said it was a seedling of the Northern Spy raised in Wisconsin. I cut the apple and saved seven seeds from it. I sent those seeds to Mr. Redpath and requested him to plant them, and from those seven seeds he now has three valuable seedlings. This is only one instance; if we had time I could name others.

Mr. Wedge: There is another instance I might refer to. The seed of the best plums that took premiums at the state fair were saved and planted by Mr. Redpath, and the most promising plums I have seen were shown to me this year at the state fair as a result of these seedlings. They were astonishingly large, have fair flesh, most delicious in flavor and are a freestone. We are going to offer to any one present who will agree to plant the seeds two of these premium apples. We are going to give two to each one as far as they will go. We have some others that will be distributed after these.

The election of officers was then taken up with the following results: president, J. M. Underwood; secretary and treasurer, Clarence Wedge.

The President: I am sure, as far as I am concerned, I accept the position cheerfully, although I had suggested to Mr. Wedge that we let some younger member of the society take up the work. However, if my administration meets with your approval, I am willing to take the office and do the best I can.

At this point the meeting of the auxiliary was declared adjourned, and Pres. Green took charge of the meeting.

Mr. Elliot: Fellow members: Unbeknown to the man whom I shall name, the Excutive Board decided to make him an honorary life member, and it is also because of a custom that we have adopted that the retiring president shall be made an honorary life member that I wish to present the name of Mr. Clarence Wedge as being eligible to honorary life membership in the society, and I offer a motion accordingly.

The motion was numerously seconded and being put to a vote prevailed unanimously.

Mr. Wedge: I know the time is very short, and I simply want to say that I am just as pleased as I can be. I appreciate the honor you have done me from the very bottom of my heart, and I thank you and hope I may be some benefit to the society and shall endeavor to do the work assigned me no matter where you put me.

The President: This horticultural society should recommend to the governor some person to act on the Forest Reserve Board. The former appointee was M. M. Williams, of Little Falls. In a letter from Gen. Andrews he recommends that Mr. Williams be re-appointed. He has served the board faithfully in every way.

On motion of Mr. Underwood, Mr. M. M. Williams, of Little Falls, was recommended for appointment to the Forest Reserve Board.

The President: We will next have the report of the committee on the President's Address. Mr. J. M. Underwood, as chairman then submitted the "Report of the Committee on the President's Address." (See index) On motion of Mr. Elliot the report of the committee was adopted and ordered placed on file.

The President: We will next have the report of the obituary committee, of which Mr. Bush is chairman.

Mr. A. K. Bush: We have no written report, but we refer with regret and sorrow to the roster before us, to the names that are shown there, and we might add to them the names of Wm. Somerville, R. T. Benjamin and Charles Luedloff.

In this connection I would suggest that a committee be appointed a year in advance so that they might be better prepared to submit a suitable report upon the lives of the deceased members.

The President: We will now have the report of the committee on final resolutions, of which Mr. A. B. Lyman is Chairman.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

Whereas, The fortieth session of this society has been one of the most successful in its history, to which end many have contributed, be it

Resolved, That we are especially indebted to the presiding officers who have contributed thereto so promptly, also to the judges, assistants in the fruit room, ushers, members of the reception committee and many others who have rendered prompt and willing assistance in bringing about this end.

Resolved, That we appreciate much the kindness of the Tri-State Telephone Company in furnishing us free of charge now for a number of years the telephone in connection with this annual meeting.

Resolved, That we are thankful to the Metropolitan Music Company for the use of their elegant piano, and especially to Mr. Trafford N. Jayne and others for the music which has added a charm to the meetings.

Resolved, That we appreciate most highly the presence of the various delegates at our meetings and especially those who have contributed so effectively to the success of our program.

Resolved, That this is the best meeting that we have ever had, and that we expect a better one next year and a more successful year for the society from now until then, and to this end we feel assured of the prompt and willing co-operation of the members and friends of the society.

A. B. LYMAN,
ALFRED TERRY,
H. W. SHUMAN,
Committee.

On motion of Mr. Older the report of the committee was unanimously adopted.

On motion of Secretary Latham the delegates and visitors from abroad were elected honorary members of the society for the ensuing year.

TWO MINUTE SPEECHES. (See index.)

Immediately following these short speeches Mr. Trafford N. Jayne favored the meeting with a closing song, and the meeting was declared by Pres. Green adjourned sine die.

Executive Board, 1907.

Record of meeting held in the secretary's office at 8 p. m., Dec. 3rd., 1906.

Present: Clarence Wedge, J. M. Underwood, Wyman Elliot, L. R. Moyer, Samuel B. Green and A. W. Latham.

The accounts of the secretary from June 25th, 1906, to date were examined and found correct, and his bill for $496.49 for expenditures during the period ordered paid.

Mr. O. W. Moore was appointed delegate to the annual meeting of Iowa State Horticultural Society.

Prof. S. B. Green was appointed delegate to meeting of American Forestry Association and Sixty Dollars appropriated to pay his expenses.

Mr. L. R. Moyer was appointed delegate to the South Dakota meeting in January.

It was decided to recommend to the society Mr. Frank Yahnke, Mr. Geo. J. Kellogg and Mr. Chas. F. Gardner as candidates for honorary life membership.

A sum not to exceed $200 was appropriated to defray the expense of seedling investigations by vice-presidents and others.

Adjourned sine die.

Wyman Elliot,
Chairman.

A. W. Latham,
Secretary.

Record of meeting held in Dayton's restaurant, Minneapolis, at 12 m. Dec. 7th, 1906.

All members present except Mr. Frank Yahnke.

Mr. Wyman Elliot was elected chairman of the board for the ensuing year and A. W. Latham was elected secretary at a salary of $1,500.00 per annum.

Moved and carried that a certain resolution referring to the use of charts in the public schools introduced by Prof. F. L. Washburn at the annual meeting and referred to the Executive Board for consideration, be referred to a committee consisting of Prof. F. L. Washburn, L. R. Moyer and J. M. Underwood for presentation to the state superintendent of schools and the State Association of County Superintendents of Schools.

It was decided to add $200 to the premium of $500 now being offered for seedling apples, to be paid $100 in 1917 and $100 in 1918.

For purposes of convenience the three members of the executive board residing in or near Minneapolis, viz. Samuel B. Green, Pres.; Wyman Elliot, Chairman Executive Board; and A. W. Latham, Secretary; shall be denominated the "Local Board."

It was decided to have dies prepared to be used in casting medals for use of the society.

The "Local Board" was empowered to fill vacancies in the offices of vice-presidents and appoint the usual annual committees.

The proposed "Fruit Breeding Farm," bill was considered and approved, (See minutes of annual meetings, 1906, for this bill) and it was decided to endeavor to secure its passage by the state legislature.

The treasurer's bond was fixed at $4,000 and the secretary's bond at $2,000.

The salaries for president and treasurer were placed at $25.00 each.

Adjourned sine die.

Wyman Elliot,
Chairman Ex. Bd.

A. W. Latham,
Secretary.

Record of meeting held in the secretary's office at 8 p. m., July 1, 1907.

Present: Wyman Elliot, Prof. S. B. Green, L. R. Moyer, J. P. Andrews, Clarence Wedge and A. W. Latham.

By a unanimous vote Mr. Thos. E. Cashman, of Owatonna, was appointed a member of the board in place of Mr. Frank Yahnke, deceased.

The accounts of the secretary for receipts and disbursements of his office from Nov. 27th., 1906, to June 25th., 1907, were audited and approved and an order ordered drawn on the treasurer for the amount of the disbursements, $2,072.11, the secretary to deposit with the treasurer the same amount of receipts, leaving in his hands a balance of $684.71.

The majority of the executive board having examined the following tracts of land as to their adaptability for a "fruit breeding farm," it was unanimously decided to recommend to the Board of Regents of the State University to purchase them for that purpose: viz. a farm of eighty-five acres owned by Daniel Fink and lying south and nearly adjoining to the Zumbro Station on the Minneapolis and St. Louis Ry., in Carver County, Minn.; also twenty acres directly west of this farm and opposite the dwelling house standing thereon; also ten acres directly east of the part of said farm on which said house stands and adjoining thereto; in all about 115 acres.

Adjourned sine die.

Wyman Elliot,
Chairman.

A. W. Latham,
Secretary.

MEMBERSHIP, 1907.

ANNUAL MEMBERS.

A

Aanes, N. J. ..... Clarkfield
Ackermann, A. W. ..... Young America
Ackerson, A. E. ..... Elbow Lake
Acklin, Mrs. H. G. ..... St. Paul
Acklin, Miss Ethel ..... St. Paul
Adsit, Dick ..... Belview
Adams, A. P. ..... Willmar
Afden, M. P. ..... Blooming Prairie
Agre, O. M. ..... Sacred Heart
Agar, J. J. ..... Hancock
Agre, Ole H. ..... Sacred Heart
Aggarn, L. L. ..... Mabel
Ahlstrom, John ..... Spicer
Akvik, John ..... Boyd
Akin, D. F. ..... Farmington
Almquist, C. A. ..... Otisville
Aibors, J. H. ..... Glencoe
Aldrich, Malcolm ..... Fairmont
Alvord, W. C. ..... Ceylon
Allen, W. C. ..... Dexter
Allen, E. M. ..... St. Paul
Amtsbauer, F. H. ..... Franklin
Amidon, Mrs. C. F. ..... Fargo, N. D.
Anderson, J. A. ..... Rollag
Anderson, Erick ..... Lake Park
Anderson, Louis ..... St. Paul
Anderson, Nils ..... Lake City
Anderson, W. H. ..... Hawley
Anderson, E. E. ..... Atwater
Anderson, J. S. ..... Atwater
Anderson, P. A. ..... Clara City
Anderson, A. D. ..... Wadena
Antisdel, H. N. ..... Milford, Ia.
Anderson, Christian ..... Rochester
Anderson, N. C. ..... Albert Lea
Anderson, V. C. ..... Mpls.
Anderson, Alfred L. ..... Tamarack
Anderson, John ..... Red Wing
Anderson, E. P. ..... Houston
Anderson, Chas. A. ..... Litchfield
Anderson, Gust M. ..... Clarkfield
Anderson, Martin P. ..... Clarkfield
Anderson, S. P. ..... Boyd
Andrews, Adam ..... Madelia
Andrews, T. E. ..... St. Anthony Park
Anderson, David ..... Comfrey
Anderson, C. H. ..... Lamberton
Anderson, Aug. ..... Watertown
Anderson, Swen ..... Rugby, N. D.
Anderson, Wm. ..... Forest Lake
Anderson, A. L. ..... Hallock
Anderson, Alfred ..... New Germany
Anderson, J. E. ..... Farwell
Anderson, Chas. O. ..... Alexandria
Anderson, Mrs. Margret ..... Ashby
Anderson, Anton A. ..... Clarissa
Anticknap, H. ..... Regina, Sask.
Anderson, Hans Geo. ..... Nicollet
Anderson, Jos. K. ..... Granite Falls
Anderson, W. L. ..... Mora
Anderson, Alfred ..... Clara City
Anderson, T. C. ..... Numedahl, N. D.
Andrews, C. C. ..... St. Paul
Andrews, J. P. ..... Faribault
Andrews, C. J. ..... Fertile
Appliger, E. J. ..... Hancock
Appel, N. ..... Mpls.
Arends, T. G. ..... Steen
Arnold, Miss Harriet R. ..... Alborn
Arneson, Ole ..... Atwater
Armitage, C. W. ..... Canby
Armstrong, H. R. ..... Chatfield
Arndt, Mrs. W. ..... Austin
Aschenbeck, J. H. ..... Mpls.
Ash, E. ..... Alden
Asleson, Ole ..... Wendell
Austin, L. A. ..... Esmond, S. D.
Austin, O. A. ..... McVille, N. D.
Aune, Martin ..... Starbuck
Automatic Pruner Co. ..Williamsport, Pa.
Austwold, Nils B. ..... Glenwood
Aune, Olof ..... Underwood
Austin, James ..... Hanna, N. D.
Austin, Mrs. Mary J. ..... Duluth
August, C. ..... Fergus Falls
Austin, John ..... Hopkins
Austin, M. E. ..... Northfield
Axtell, Mrs. A. D. ..... Eureka
Axnes, Nels J. ..... Montevideo
Ayers, H. F. ..... Wilton Jct., Ia.

B

Baird, Rev. Andrew B. ..Winnipeg, Man.
Bailiff, R. L. ..... Bloomington
Badrann, Peter ..... Harvey, N. D.
Bacheller, T. T. ..... Forest Lake
Baasen, Albert R. ..... Wendell
Back, John ..... Fergus Falls
Backer, Andrew A. ..... New Ulm
Bailey, J. V. ..... Newport
Baldwin, H. J. ..... Northfield
Bakken, H. O ..... Comfrey
Ball, C. E. ..... Delano
Baklund, C. A. ..... Willmar
Baldwin, G. A. ..... Milnor, N. D.
Bakke, John ..... Sacred Heart
Baker, Arthur R. ..... Osakis
Balgaard, Joseph ..... Ashby
Baker, E. D. ..... Fairmount, N. D.
Barton, Mrs. Isabella ..... Excelsior
Barrows, Morton ..... St. Paul
Barsness, J. A. ..... Kenyon
Barnstad, Ole ..... Willmar
Barrett, Michael ..... Madelia
Barber, T. J. ..... Marshall
Barclay, J. M. ..... Madison Lake
Bartsch, Chas. G. ..... Mankato
Bartram, Mrs. C. S. ..... St. Paul
Barnitz, Chas. ..... Austin
Bartlett, F. A. ..... Mpls.
Bascomb, Mrs. Ella C. ..... Mpls.
Bates, A. N. ..... Excelsior
Bates, W. K. ..... Stockton
Bates, H. W. ..... Excelsior
Bayard, P. C. ..... Eden Prairie
Bauleke, H. W. ..... Le Sueur
Bastran, W. J. ..... Preston
Batho, Geo. ..... Winnipeg, Man.
Bayton, C. R. ..... Fairmont
Becker, E. W. ..... Excelsior
Beckley, J. ..... Nerstrand
Beckman, O. J. ..... Cokato
Beck, Wm. M. ..... Ada
Beals, W. H. ..... Brookings
Beck, Will B. ..... Big Lake
Belden, Rev. C. D. ..... Austin
Becker, J. C. ..... Adrain
Bell, F. W. ..... Mpls.
Beal, John J. ..... Ruthton
Becker, C. W. ..... Wilmont
Beckman, J. W. ..... Cokato
Beise, Otto ..... Garfield
Beaumier, B. R. ..... Grand Rapids
Berry, Frank ..... Stillwater

Berger, Geo. .....Arlington
Benjamin, J. F. .....Hutchinson
Bergstrom, Robt. .....Atwater
Berthelsen, Christ .....Albert Lea
Benson, Halvor E. .....Harmony
Bergh, M. P. .....Madison
Benson, Edwin .....Jackson
Berg, L. A. .....Sanborn
Benton, H. W. .....Mpls.
Bengtson, C. A. .....Jordan
Bernhardson, Lars .....Comstock
Berg, H. O. .....Cottonwood
Berg, E. O. .....Whalan
Berget, O. K. .....Crookston
Benson, A. O. .....Blooming Prairie
Berg, I. I. .....Climax
Berggren, Ernest E. .....Loma, N. D.
Berry, J. B. .....St. Paul
Besserud, M. O. .....Maple Plain
Betz, F. A. .....Boyd
Bethke, Herman .....Franklin
Beseke, C. E. .....Alpha
Best, E. D. .....Mpls.
Biermann, Henry .....Glencoe
Bishman, Mrs. Mary A. .....Waseca
Bisbee, John .....Madelia
Birch, C. A. .....Willmar
Bisbee, Albert J. .....Excelsior
Birks, Geo. .....Jamestown, N. D.
Bishop, L. S. .....Sauk Center
Bjorkman, A. M. .....Columbus, N. D.
Bjornberg, Joe C. .....Willmar
Bjorsell, Andrew .....Willmar
Bjornberg, G. J. .....Willmar
Blackmer, Ray C. .....Albert Lea
Blair, C. L. .....St. Charles
Bluhm, A. J. .....Le Sueur
Blackmore, Hon. Jno. C. ....New Zealand
Blasen, Mike .....Caledonia
Blaker, Rev. Chas. D. .....Mpls.
Black, R. J. .....Meadowlands
Blossom, Mrs. Geo. F. .....Mpls.
Blanchard, E. H. .....Morgan
Blade, Levi .....Grafton, N. D.
Blakestad, L. .....Lyle
Blanck, Irvin E. .....Welcome
Bonde, Edwin .....Cottonwood
Boss, Prof. Wm.....St. Anthony Park
Bogert, Wm. E. .....Mpls.
Boardman, Mrs. H. A. .....St. Paul
Bost, A. A. .....Excelsior
Bosshard, Herman .....Moorhead
Borius, J. L. .....Mpls.
Booth, G. H. .....Lake City
Boelk, Ferdinand .....Lansing
Bolsta, A. L. .....Ortonville
Boardman, F. H. .....Mpls.
Bofferding, W. H. .....Mpls.
Bollmann, Paul .....Balaton
Bordson, Bert .....Elbow Lake
Boothroyd, Richard .....Alexandria
Borden, H. G. .....Bertha
Bolin, J. A. .....Clarissa
Bosshard, S. G. .....Sauk Center
Boyle, M. S. .....Adrain
Boutwell, E. E. .....Kasota
Bowers, Merrill .....Le Roy
Bowman, Dr. F. C. .....Duluth
Bowden, Dr. R. W. .....Duluth
Boyce, Wm. .....Pipestone
Boynton, E. W. .....Rochester
Bowers, D. M. .....Howard Lake
Boyd, D. C. .....White Earth, N. D.
Boyd, J. B. .....Willmar
Branson, M. L. .....Fairmount, N. D.
Braunworth, Aug. C. .....Chaska
Brackett, A. .....Excelsior
Brady, C. H. .....Deerfield
Brakke, John P. .....Windom
Brady, J. F. .....Deerfield
Branson, H. .....Mpls.
Brainerd, John .....Portland, N. D.
Brinkman, H. .....Glencoe
Brechett, J. J. .....Glencoe
Brennan, Mrs. Catherine M.....Elk River
Brevig, A. L. .....Starbuck
Briggs, H. W. .....Sanborn
Brevig, C. L. .....Starbuck
Bredvold, L. L. .....Belview
Briggs, O. P. .....Mpls.
Brown, Mrs. Chas. .....Cavalier, N. D.
Brown, Geo. H. .....Detroit
Bryant, Mrs. Chas. M. .....Sauk Center
Bruce, Chas. R. .....Elk Point, S. D.
Brown, J. P. .....Mpls.
Brunkan, C. A. .....Delano
Bromstad, Andrew .....Milan
Brown, C. A. .....Berthold, N. D.
Brown, Miss Emily J. .....Mpls.
Brown, J. A. .....Windom
Brooks, D. C. .....Byron
Brown, J. M. .....La Crescent
Brown, August .....Winthrop
Brooks, S. G. .....Lake Crystal
Bryan, A. C. .....Red Wing
Broken, Ole F. .....Preston
Brown, Ernest L. .....Warren
Broman, Aug. .....Atwater
Brown, J. P. .....Eureka
Brown, Mrs. Inez .....Eureka
Brown, T. H. .....Rock
Brunes, Ole .....Smiley
Brynildsen Jac. .....Canby
Brown, H. A. .....Brownsdale
Brown, W. A. .....Big Fork
Brown, A. D. .....Baraboo, Wis.
Broen, Chas. E. .....Champlin
Broberg, P. .....New London
Brown, W. W. .....Amenia, N. D.
Bugbie, A. E. .....Paynesville
Buchanan, D. W. .....St. Charles, Man.
Bunnell, M. C. .....Newport
Buol, Peter .....Kellogg
Bubar, W. E. .....Stockton
Bubolz, Chas. .....Winthrop
Bull, Prof. C. P. .....St. Anthony Park
Bull, J. Harry .....Mpls.
Buro, John .....Ashawa
Burton, Miss Hazel .....Deephaven
Burdick, Eldon G. .....Mpls.
Burton, Paul .....Belle Plain
Burns, Geo. T. .....Ashby
Burgeson, H. G. .....New Salem, N. D.
Burtness, H. E. .....Caledonia
Bussee, H. F. .....Merriam Park
Buswell, L. A. .....Bruno
Butler, Gilbert .....Mabel
Buss, O. E. .....Edgerton
Busch, Leonard .....Fulda
Byhold, Gerhard .....Rushford
Byhold, S. A. .....Rushford
Bylander, Nels G. .....Balaton
Bjorks, Knute .....Fergus Falls
Bjelland, R. R. .....Hoffman

C

Cairns, Miss Gertrude M..Ellsworth, Wis.
Calderwood, R. M. .....Williston, N. D.
Campion, J. A. .....Faribault
Caldwell, John .....Virden, Man.
Canten, J. A. .....Milan
Caldwell, Frank .....Ashby
Cady, J. E. .....Medford
Carlson, C. H. .....Fertile
Carlson, Victor .....Grayling
Carpenter, M. V. .....Winnebago
Carroll, R. C. .....St. Anthony Park
Carlier, Aug. .....Dodge Center
Carleton, Herbert .....St. Louis Park
Carlson, Andrew .....Harris
Carpenter, Geo. L. .....Vermillion, S. D.
Carr, W. A. .....Excelsior
Catlin, T. I. .....Waukenoba
Cassem, T. P. .....Odin
Casjent, Henry .....Sisseton, S. D.
Caswell, Arthur A. .....Anoka

Cederberg, Aug. G. .....Barrett
Chapin, E. E. .....Mpls.
Chase, O. C. .....Fergus Falls
Chandonnet, Rev. Z. L. .....Mahnomen
Chapman, R. W. .....Plainview
Chatfield, Miss L. M. .....Mpls.
Chatfield, Mrs. E. C. .....Mpls.
Chamberlain, Mrs. Louis M. .....Mpls.
Chaffee, G. A. .....Merriam Park
Chase, Bradford .....Janesville
Chapman, Geo. .....Royalton
Christianson, P. A. .....Hinckley
Christopherson, Nels .....Hoffman
Churchill, O. O.....Agricultural Col. N. D.
Chowen, W. S. .....Minnetonka
Christianson, B. P. .....Hutchinson
Christie, Wm. .....Badoura
Christenson, Andrew .....Hancock
Cheney, W. H. .....Olivia
Christoferson, O. C. .....Mpls.
Churchill, H. E. .....Skyberg
Churchward, Frank .....Dodge Center
Christian, J. F. .....Beardsley
Christianson, C. M. .....Ruthton
Christensen, P. J. .....Tyler
Church, B. C. .....Duluth
Christenson, Ole A. .....Henning
Chuett, Carl .....Dexter
Cheney, John .....Morton
Cleveland, Henry .....Duluth
Clausen, Hans A. .....Evan
Clemensen Nels .....Fertile
Clausen, P. .....Albert Lea
Clingman, Frank .....Austin
Clipperton, ...Jackson
Clement, S. .....Albert Lea
Clapp, Geo. .....Appleton
Clough, Ed .....Willow River
Clemons, L. F. .....Mora
Clausen, Henry .....Otter Tail
Clausen, A. .....St. Paul
Clarquist, Oscar .....Hoffman
Clements, O. H. .....Fargo, N. D.
Clifford, H. H. .....Royalton
Clemens, E. J. .....Prescott, Wis.
Cobban, Walter H. .....Mpls.
Colburn, Adna .....Hawley
Coler, Chas. .....Herman
Collins, Aid .....Mpls.
Conklin, Wm. .....Cambridge
Conrad, John .....Ortonville
Ccates, G. W. .....Rich Valley
Cole, W. W. .....Madelia
Colebank, E. .....Madelia
Collins, Wm. S. .....Wadena
Colvill, H. C. B. .....Missoula, Mont.
Coffin, H. W. .....Duluth
Cooper, Madison .....Watertown, N. Y.
Cook, Dewain .....Jeffers
Corbitt, L. .....Rose Creek
Cooley, C. H. .....Madelia
Cooley, Dr. C. O. .....Madelia
Corson, Chas. V. .....Glencoe
Cooper, Thos. .....Alexandria
Cordes, Henry .....Henning
Cooke, F. J. .....Roseau
Cook, F. L. .....Spearfish, S. D.
Cowles, E. D. .....Vermillion, S. D.
Cowles, F. J. .....West Concord
Councilman, F. H. .....Hancock
Coss, L. E. .....Luverne
Countryman, A. D. .....Appleton
Covell, Miss Janette B. .....Mpls.
Coy, Chas. D. .....Knox, N. D.
Crane, R. E. .....Grand Meadow
Crane, H. L. .....Excelsior
Crandall, L. V. .....Red Wing
Cran, P. B. .....Long Lake
Craven, J. W. .....Norwood
Crawford, Wm. .....Wahpeton, N. D.
Cramer, Fred .....Mapleton
Cressy, T. J. .....Granite Falls
Craig, F. M. .....Anoka
Cressy, Jos. .....Mound

Crandal, Henry .....Rockford
Crosby, S. P. .....Braham
Crockett, E. D. .....Mpls.
Crosby, F. M. .....Hastings
Cross, Mrs. E. .....Sauk Rapids
Crosby, Clarence .....Madelia
Cross, L. E. .....Winnebago
Cummings, Geo. W. .....Mpls.
Cummings, A. .....Fairfax
Currie, Mrs. E. A. .....Merriam Park
Cummins, Mrs. J. R. .....Eden Prairie
Cushman Power Sprayer Co. Linc'n, Neb.
Cuther, H. C. .....Jackson
Cuzner, Harold..Dept. Ag., Manila, P. I.
Cuzner, E. A. .....Mpls.
Cundy, W. J. .....Rapid City, Man.
Curtis, O. H. .....Osakis
Cutler, Dr. C. B. .....Park Rapids
Cutting, Mrs.....Carnegie, Brandon, Man.
Czanstkowski, Albert .....Delano

D

Dahlberg, Oscar .....Minnetonka
Daniels, Wm. .....Stanton
Dagle, W. W. .....Goodhue
Dank, Philip .....Mankato
Dahl, P. C. .....Clarkfield
Dahl, C. T. .....Madelia
Dahlen, O. E. .....Albert Lea
Dale, H. J. .....Renville
Dahl, M. J. .....Montevideo
Danielson, Solomon .....Rothsay
Dahlberg, O. Z. .....Sandstone
Day, Stephen H. .....Northfield
Day, C. P. .....Janesville
Davis, O. H. .....Madelia
Davis, Geo. .....Morristown
Davis, Evan J. .....Garvin
Day, Geo. W. .....Edgerton
Davison, A. H., ...Des Moines, Ia.
Daurce, Olaf .....Minneota
Davies, D. E. .....Lake Crystal
Davis, W. H. .....Mapleton
Davis, C. C. .....Sherman, S. D.
Deline, W. F. .....Cannon Falls
Dean, W. H. .....Morristown
De Mars, G. J. .....Fertile
Decker, J. S. .....Austin
Delamater, D. P. .....Mpls.
Debaugh, John .....Verdi
Dehrer, Henry .....Mendota
Dea, John .....Mpls.
De Wolf, Mrs. Jessica .....St. Paul
Dermot, Nick .....St. Paul
Devine, Ash .....Mapleton, N. D.
Dike, C. C. .....White Bear
Dickmann, E. J. .....West St. Paul
Diethelm, M. .....Victoria
Dillon, F. D. .....Beardsley
Dickson, W. A. .....Almena, Wis.
Dickson, Mrs. P. R. .....Dresbach
Dickey, E. V. .....Appleton
Domrese, F. G. .....Magnolia
Doepping, Wm. G. .....Claremont
Dokken, C. C. .....Astoria, S. D.
Dodsworth, James D. .....Granite Falls
Dockham, A. T. .....Eagle Bend
Dokken, C. O. .....Kenyon
Dodds, J. E. .....Wheaton
Dobs, Theodore .....Swansville
Dow, J. T. .....Mpls.
Doughty, R. M. .....Holland
Dorsey, Dr. J. H. .....Glencoe
Doudna, J. M. .....Mpls.
Dovre, Ole O. .....Minneota
Drew, Prof. Jas. M. ....St. Anthony Park
Drum, S. H. .....Waseca
Drewes, Wm. .....Granada
Drake, Geo. .....Madelia
Drake, R. F. .....Wells
Dunn, John W. G. .....St. Paul
Duncan, Geo. .....Zumbro Falls
Durkee, M. P. .....Hancock

Duniez, A. .....Spring Valley
Duncasson, W. H. .....Winnebago
Durand, A. .....Waseca
Durrell, J. J. .....Big Fork
Dufrane, C. O. .....Little Sauk
Dummert, O. W. .....Sauk Center
Duncanson, Leslie .....Stewartville
Duckstad, L. K. .....Fertile
Du Fault, Peter .....Crookston
Dybvig, Nels H. .....Colton, S. D.
Dykema, S. B. .....Svea
Dynes, Walter .....Owatonna
Dybdal, Tasten E. .....Elbow Lake

E

Eastgate, J. E. .....Larimore, N. D.
Eberhard, C. C. .....Caledonia
Eckman, S. M. .....Cokato
Eckstein, Herman .....Chester, Ia.
Eddy, P. P. .....Willmar
Edic, Mrs. D. ....Louis Bridge P. O. Man.
Edwards, C. T. .....Minneota
Effertz, Peter .....Norwood
Effertz, Christ .....Norwood
Egnell, A. .....Howard Lake
Eix, Gustav .....Little Falls
Einertsen, T. T. .....Westbrook
Emil, K. .....Cokato
Ekstrand, J. A. .....Cokato
Ekdahl, P. W. .....Otisville
Ekgren, John .....Buffalo
Eklund, P. A. .....Willmar
Ellison, C E.....Herman
Eilison, F. H.....Mpls.
Ellis, Mrs. Carrie S....Sioux Falls, S. D.
Eider, J. O.....Tracy
Elsing, S. L.....Windom
Eliason, Emil.....Alberta
Ellingson, Sever.....Mpls.
Emerson, N.....Mpls.
Emminghouse, Ed.....Fairmont
Empenger, F. J.....Maple Plain
Engen, C. H. .....Norway Lake
Englestead, M. A. C.....Fertile
Engquist, John.....Mpls.
Endsley, P. M.....Mpls.
Enstad, L. O.....Granite Falls
Englund, G. T.....Alexandria
Engel, Aug.....Alexandria
Engel, A. .....Morgan
Engelrup, Wm.....Morgan
Ericson, E. M.....Hector
Erickson, Even.....Fountain
Erickson, G. P.....Svea
Erickson, Nels.....Lamberton
Erickson, Alex.....Tyler
Erickson, Hans.....Beardsley
Erlandson, V.....Elbow Lake
Ericson, J. E.....Fergus Falls
Ericson, G. R.....Goodhue
Erickson, Bennie.....Wheaton
Erickson, Richard.....Stillwater
Erwin, D. A. .....Waseca
Essig, Christ.....Sanborn
Essig, Aug.....Sanborn
Eskelson, Peter L.....Glenwood
Evans, D. H.....Tracy
Ewald, Julius.....Mpls.
Ewert, R.....Janesville
Fallis, M. H.....Jamestown, N. D

F

Farrar, Geo.....Elgin
Farmer, E. A.....Mpls.
Fantsch, A. C.....Montrose
Farrer, H. C.....Kasson
Farnsworth, C. H.....Albert Lea
Farrar, F. F.....White Bear
Fay, E. J.....Windom
Farwell, D. A. .....Hewitt
Farrell, E. D.....Ledyard, Ia
Felland, L. T.....Sioux Falls, S. D.
Ferodowill, F. X.....Wayzata
Ferguson Bros.....Luverne
Feig, Henry.....Atwater
Fergerson, Jas. A.....Duluth
Featherstone, S. T.....Red Wing
Fenton, Jessie.....Pine Island
Ferguson Bros.....Philadelphia, Pa.
Felland, Prof. A. G. .....Northfield
Ferson, C. E.....So. Haven
Fergison, Hans.....Appleton
Felkey, D., Jr.....Armstrong, Ia.
Fedje, Chris.....Hoople, N. D.
Fitzpatrick, John F.....St. Paul
Fitzer, Chas. .....Robbinsdale
Fiske, E. D.....Chatfield
Fischer, H. L.....St. Paul
Fisher, F. A.....Arlington
Fink, Julian.....Carver
Fisher, Frank.....Gaylord
Fisher, Fred.....Clarkfield
Finke, C. W.....Luverne
Finnie, David.....Friesland
Fitzmonds, John.....LeRoy, N. D.
Fink, Christ.....St. Bonifacius
Flagstad, J.....Sacred Heart
Flygbie, A.....Atwater
Flygbie, H. H.....Atwater
Flaig, Michael.....Sanborn
Fiyen, Henry.....Dawson
Flattim, Hans.....Mpls.
Florida, Jessie M.....Rockford
Fletcher, F. M.....Farmington
Fiesland, M. O.....New London
Floreen, Swan.....Constance
Fletcher, Mrs. Eleanor.....St. Louis Park
Fligge, J. C.....Marshall
Flint, H. W.....Gladstone
Flaten, Prof. Nils.....Northfield
Flikka, Olaus.....Shelly
Fleming, Albert.....Garden City
Flaig, C. J.....Sanborn
Flagle, M.....Mpls.
Flatin, G. F.....Spring Grove
Florance, Ed.....Humboldt
Foot, P. H.....St. Paul Park
Ford, John.....Hawley
Foss, Christian .....Richfield
Forbes, Chas. S.....West St. Paul
Forgerson, G. A.....Rosemount
Ford, F. E.....Glencoe
Ford, Frank H.....Mpls.
Forbes, Wm.....Winnebago City
Fobes, E. J.....Mpls.
Fortin, G. E.....Mpls.
Folsom, H. H.....Mpls.
Foster, R. J.....Triumph
Fortier, R.....Crookston
Follette, Denis.....Hastings
Fox, Edwin.....Missoula, Mont.
Freeman, Mrs. L. Aurelia.....Austin
Fritz, F. H.....Luverne
Friderickson, S. C.....Cobden
Frenn, P. J.....Red Wing
Fritcher, C. E.....Hancock
Freeman, C. H.....Zumbrota
Frad, O. H.....Harmony
Frydenlund, E. A.....Rugby, N. D.
Frost, Ed.....Albert Lea
Frye, P. H.....Willmar
Fryberg, Emil.....Boyd
Fritze, Leonhard.....Claremont
Frederickson, C. H.....Clements
Francis, C. C.....Madelia
Frankland, Jos.....Belle Plaine
French, N. S.....Berlin, N. D.
Freeberg, J. G.....Willmar
Frank, J. R.....Mpls.
Frank, David.....Cottonwood
Frank, Dr. J. H.....Anoka
Fryer, W. E.....Mantorville
Fulkerson, V.....St. Anthony Park
Funke, J. L.....Wabasha
Furlong, J. J.....Austin

Fuller, E. D.....Mpls.
Fuller, F. C.....Madison, S. D.

G

Galligan, John.....Lanesboro
Galloway, J. E.....Austin
Gabrielson, C. G.....Comfrey
Gaarder, Peter E.....Kramer, N. D.
Gaare, John O.....Perley
Gardner, C. W.....Mpls.
Gastfield, A. F.....Duluth
Garig, John.....Caledonia
Gaspard, J. P.....Caledonia
Garvin, A. D.....Osceola, Wis.
Gaylor, M.....Kimball
Gates, A. H.....Rice
Gehlen, Frank.....Glencoe
Gerdsen, Henry.....Victoria
Gengnagel, Chas.....Kellogg
Gerth, Wm. B.....Lamberton
Gearty, T. G. .....Robbinsdale
George, O. H.....Hastings
Gargen, N. B.....Hastings
George, E. S.....Graettinger, Ia.
Gerving, Theo.....St. Paul
Gibbs, F. H.....St. Anthony Park
Gibson, Jos.....Luverne
Gibbs, Mrs. F. H. .....St. Anthony Park
Gibbs, Miss Ida W.....St. Paul
Giesman, Rosa.....Merriam Park
Gibbs, C. L.....Anoka
Giddings, G.....Anoka
Gilland, F. L.....Excelsior
Gilbert, L. W.....Glencoe
Giossi, F. C.....Stillwater
Gilbert, John.....Algo
Gillertson, A. C.....Spring Grove
Gilbert, A. H.....Easterville, Ia.
Gillis, John J.....Mpls.
Gillitzer, Joseph.....St. Joseph
Gillam, W. S.....Redfield, S. D.
Gillespie, W. E.....Hopkins
Gill, Edw.....White Bear Beach
Glyer, Alfred.....Forest Lake
Gleaser, Jacob.....Owatonna
Glise, Geo. W.....Prosper
Gleason, Michael.....Mpls.
Gmiener, Rev. John.....Springfield
Goodman, D. E.....Faribault
Goldberg, W. G.....West St. Paul
Goodsell, Miss A.....Mpls.
Gooler, L. A.....Wabasso
Goltz, John.....Havana, N. D.
Gould Mfg. Co.....Seneca Falls, N. Y.
Gorman, P. T.....Goodhue
Gordon, Geo. F.....Mpls.
Gorder, Knut.....Starbuck
Gordon, F. A.....Sauk Center
Gove, E. L.....Madelia
Grant, John.....Wyoming
Graham, W. J.—M. D....Walhalla, N. D.
Gray, Jos. L.....St. Cloud
Graham, W. J., Jr.....Anoka
Gray, James L.....Sauk Center
Grant, Eugene.....Moorhead
Greening, C. F.....Grand Meadow
Green, Prof. S. B.....St. Anthony Park
Greaza, A. E.....Highwood
Gregg, O. C.....Lynd
Green, C. .....Morgan
Gregory, Henry.....Jordan
Green, J. F.....Worthington
Greely, A. M.....New Rockford, N. D.
Gregory, Wm. T.....Beach, N. D.
Gregor, John.....Fort Ransom, N. D.
Grimes, Geo. S.....Mpls.
Grout, T. P.....Luverne
Grover, C. A.....Glyndon
Grimm, Ben.....Duluth
Gruhlke, W. H.....Jackson
Grover, O. J.....Glyndon
Grift, Peter.....Cambridge
Grussendorf, Chas.....Courtland
Groat, H. G. .....Anoka
Guler, Stephen.....New Rockford, N. D.
Gunderman, H.....Wabasha
Gudvangen, B.....Albert Lea
Gue, W.....Lake City
Gullick, T. M.....Edgerton
Gurney, C. W.....Yankton, S. D.
Gulleckson, C. J.....Beltrami
Gudal, O. A.....Bricelyn
Gunderson, Gustav.....Webster, S. D.
Gynild, Rev. E.....Willmar

H

Haggard, H. .....Excelsior
Hagen, Ole J.....Hendrum
Harrison, H. W.....Le Roy
Haberman, John M.....Monticello
Hage, Geo.....Madelia
Hagg, Nels H.....Rock
Hager, H. M.....Granite Falls
Haack, F. J.....Montivedeo
Hagrin, H. L.....Vesta
Hackman, Fred.....Sauk Center
Hacklander, Wm.....Blue Earth
Hagen, D.....Dexter
Hagen, Carl.....Biscay
Halverson, C.....Maple Plain
Hall, Ed. C.....Wabasha
Hallberg, Emil.....Murdock
Halloff, Mrs. Ellen.....Willmar
Halverson, Oscar.....Spring Grove
Halvorson, Ole.....Sisseton, S. D.
Haiznagel, Lewis.....Senborn
Halasca, Winslow.....Hopkins
Hanson, Simon J.....Dawson
Hamustrom, C. J.....Mpls.
Hanson, H. A.....Herman
Hanson, Jas. F.....Fertile
Hansen, H. A.....Zumbrota
Hanson, J. G.....Kasson
Hanson, C. L.....Fertile
Hansen, H. F.....Albert Lea
Hamilton, Geo. H.....West St. Paul
Hansen, H.....Albert Lea
Hanson, R. E.....Clarkfield
Handy, A. M.....Granada
Hanson, Mrs. A. S.....Mpls.
Hansen, J. P.....Morgan
Hansen, Andrew.....Evan
Hamilton, Wm.....Winnipeg, Man.
Hanson, J. B. .....Anoka
Hansen, Geo. A.....Renville
Hansen, J. P.....Brownsdale
Hangard, P. R.....Kensington
Hanson, H. J. .....Osakis
Hanson, Frank O.....Parkers Prairie
Hamilton, S. H.....Bertha
Hanson, Iver.....Clarissa
Hanson, Wm.....Clarissa
Hanson, Jas. M.....Russell
Hansen, C. N.....Rush City
Hanna, W. A.....Mapleton
Hansen, G. L.....Elkton
Hanson, A. J.....Big Lake
Hammer, M. E.....Heiberg
Hanson, Henry.....Barry
Hanson, A. L.....Ada
Harmon, M. S.....Geneva, N. Y.
Harrison, J. F.....Excelsior
Harrington, C. L.....Ayr, N. D.
Harley, Hugh.....Swan River, Man.
Hart, W. W.....Delavan
Hard, F. B.....St. Louis Park
Harrison, J. R.....Eden Prairie
Haralson, Chas.....Excelsior
Hartwell, Ezra.....Magnolia
Hartman, F. E.....Minneiska
Harkness, W. L.....Wallace
Haseltine, Frank T.....Crookston
Hart, E. W.....Madison, S. D.
Harrah, Mrs. J. W.....Mpls.

Hartmann, Frank.....Wilmont
Haseltine, E. W.....Grand Forks, N. D.
Harrison, Wm.....Duluth
Harland, Frank.....Drake, N. D.
Harrison, T. M.....Glenwood
Harmon, Chas. S.....Villard
Haskins, Luverne.....Ellendale, N. D.
Hart, Geo. W.....Northwood, N. D.
Hawkins, Alf. O.....Excelsior
Hawkins, J. C.....Austin
Hays, Hon. W. M.....Wash. D. C.
Haynes, Prof. A. E.....St. Paul
Hatledal, Ole O.....Benson
Hawkins, R. H.....Houston
Hawkes, A. S.....Waseca
Hayworth, E.....Welcome
Hawkins, John .....Mpls.
Hawkins, Mrs. John.....Mpls.
Haugen, A. J.....Elbow Lake
Hatch, Albert.....Sauk Center
Hazen, Edward.....Duluth
Hayer, Edward .....Blue Earth
Healy, G. B.....Sioux City, Ia.
Heisz, E. R.....Nora Springs, Ia.
Heins, C. A.....Olivia
Hewitt, Lillette A.....Mpls.
Heins, H. H.....Los Angeles, Cal.
Heifort, E. A.....Stillwater
Heck, Chas.....Minneiska
Heimark, O. J.....Clarkfield
Heimark, J. H.....Granite Falls
Helmek, H.....Chaska
Heaton, Mrs. Joseph.....Rochester
Hellzen, C. A.....Clarkfield
Hearding, J. H.....Eveleth
Hegdal, H. O.....Belview
Heald, W. H.....Letcher, S. D.
Hektner, H. C.....Battle Lake
Hegdahl, H. B.....Belview
Heath, C. C.....Beltrami
Heggestad, Lewis.....Starbuck
Helmer, S. O.....Buffalo
Henry, Earle S.....Montevideo
Hemmelgarn, Jos. B.....Perham
Henneker, W. S.....Mpls.
Henry, Frank.....Skyberg
Henri, T. O.....Houston
Hendrickson, Frank.....Malcolm
Hensley, C.....Yellow Grass, Sask.
Hemstad, M. A.....Montevideo
Heneke, Ida.....Wood Lake
Hensel, Ed.....New Ulm
Hemrick, Henry.....Blue Earth
Hendry, S. V. R.....Austin
Hess, Jacob .....Lamberton
Hermunslie, L. .....Abercrombie, N. D.
Herzog, Jos.....St. Bonifacius
Hesselgrave, R. V.....Winnebago
Hess, Prof. H. C.....Glencoe
Hetzel, Christ.....Harmony
Hermonson, O. J.....Albert Lea
Hibbs, D. R. P.....Albert Lea
Hintermister, J. Henry.....St. Paul
Hinckley, C. M.....Osseo
Highby, L. P. H.....Albert Lea
Higbie, W. S. .....Eden Prairie
Hidde, Fred.....Barrett
Highmark, L. P.....W. Duluth
Hiliger, Rev. Aug.....Boyd
Hilleboe, H. S.....Willmar
Higbe, C. D.....Mantorville
Hilling, J. A.....Madelia
Hill, E. E.....Waltham
Hickerson, W. N.....Long Prairie
Himter, W. N.....Northfield
Hipple, C. G.....Henning
Hoehn, Adolf.....Madison Lake
Hoecker, Prof. F. L.....St. Anthony Park
Hoffman, Neils C.....Maple Plain
Hoffman, G. E.....West St. Paul
Hoffman, John.....Frontinac
Hoiland, Selmar.....Rushford
Hoffman, H. G.....Marshall
Hodgson, Thos.....Elbow Lake
Hoflin, Jos. J.....Hopkins
Holten, John.....Fertile
Homme, Ole O.....Heron Lake
Holmes, O. A.....Cokato
Holum, Oscar.....Spring Grove
Holmgren, Alfred.....Pennock
Holmes, R. N.....Mpls.
Holmberg, J. E.....Avoca
Holes, James .....Fargo, N. D.
Holmes, J. L.....Mpls.
Holzapfel, Fred.....Golden Valley
Hokanson, Jno.....Bertha
Holt, John E.....Carver
Holty, G. T.....Bagley
Holm, Wm. .....Franklin
Holmgren, P. O.....Hoffman
Holtz, Jacob.....Arcadia, Wis.
Holger, John.....Rushford
Horner, John.....Graceville
Hornly, H. C.....Cloquet
Houg, J. P.....Luverne
Howland, F. B.....Northfield
Horstead, M. A.....Fertile
Hovland, J. O.....Fertile
Houston, G. F.....Herman
Horton, W. H.....Alexandria
Hoss, Mrs. N.....Fertile
Houple, Joseph.....Elgin
Hoyne, A. J.....Albert Lea
Hopper, S. T.....Mpls.
Hortmann, Christ.....Waconia
Howard, Frank.....Madelia
Hoyt, B. T.....St. Paul
Howlett, Mrs. D. D.....Oshkosh, Wis.
Hopwood, J. E. .....Maxbass, N. D.
Howard, J. R.....Sauk Center
Hulbert, C. S.....Mpls.
Huff, Theo. A.....Fergus Falls
Hudson, John H.....Claremont
Huleback, H. P.....Kenyon
Hult, Aug.....Langford, S. D.
Huffman, H. I.....Amboy
Hubbell, L. T.....Philbrook
Hughart, H. G.....Mpls.
Hughes, B. C.....Cordova
Huber, Frank.....Shakopee
Husting, L. P.....Hastings
Husser, Henry .....Minneiska
Hunter, R. M.....Duluth
Huston, H. A.....Chicago, Ill.
Hurst, John H.....St. Peter
Hurtt, Wm.....Hoople, N. D.
Hutchins, F. J.....Huron, S. D.
Huse, Ole.....Cottonwood
Hummel, J. A.....St. Anthony Park
Huschke, C. B.....Morgan
Hunter, J. A.....Tracy
Hutchinson, W. H.....Eagle Bend
Hursh, J. M.....Henning
Hurney, Thos.....Bushnell, S. D.
Huseby, A. A.....Adams

I

Ives, W. S.....Annandale
Innes, J. C.....Luverne
Ingram, Dr. L. C.....Zumbro Falls
Innis, Geo. S.....Hamline, St. Paul
Ingelbretson, Lewis.....Lake Park
Iverson, O.....Jackson
Iverson, Iver O.....Lamberton
Isaacson, C. W.....Armstrong, Ia.
Ingersoll, J. F.....Crookston
Irwin, H. W.....Stillwater

J

Jacobson, P. G.....Madison
Jackson, Peter .....Valley City, N. D.
James, Geo. W.....Forest Lake
Janney, T. B.....Mpls.
Jardine, J. B.....Wayzata

Jacobson, Martin A.....Granite Falls
Janss, Dr. .....Welcome
Jager, Francis .....Mpls.
Jarhn, Aug.....Springfield
Jasperson, L. W.....Albert Lea
Janson, Aug.....Willmar
Jacobson, Olof.....Montevideo
Jager, H. J. .....Owatonna
Jardine, S. D.....Sauk Center
Jacobson, Niels.....Hills
Jack, Nathan.....Blakely
Jackson, Adolph.....McIntosh
Jarchow, Geo.....Stillwater
Jensen, Jens A.....Rose Creek
Jefferson, Lucy E.....Bingham Lake
Jesperson, N. P.....Minnetonka Beach
Jensen, T. P.....Little Falls
Jensen, Anton.....McIntosh
Jensen, Christen.....Waupaca, Wis.
Jensen, Andrew P.....St. Louis Park
Jensen, Edwin.....Mpls.
Jensen, Chris. M.....Albert Lea
Jennes, B. F.....Willmar
Jensen, Adolph.....Mpls.
Jensen, J. P.....Morgan
Jesse, F. W.....Morgan
Jensen, Hans P.....Erwin, S. D.
Jenson, J. C.....Madelia
Jedlicka, Henry.....Clarissa
Johnson, I. M.....Cottonwood
Johnson, Gust J.....Clarissa
Johnson, David.....Kasota
Johnson, Jens J.....Windom
Johnson, J. P.....Excelsior
Johnson, P. G. .....Lake City
Johnson, E. A.....St. Cloud
Johnson, Carl E.....Pelican Rapids
Johnson, Harry.....Hawley
Johnson, E. J.....Winnipeg Junction
Johnes, T. B.....Moorhead
Johnson, Louis.....Murdock
Johnson, L. J.....Atwater
Johnson, B. M.....Atwater
Johnson, Olof.....Bricelyn
Johnson, Mrs. Sarah A.....Ostrander
Johnson, C. I.....Austin
Johnson, A. J.....Spring Grove
Johnson, O. G.....Harmony
Johnson, Knut.....Harmony
Johnson, Emil .....Hawley
Johnson, Chas.....Pennock
Johnson, O. N.....Gibbon
Johnson, Hans C.....Franklin
Johnston, W. D.....Madelia
Johnson, A. F.....Avoca
Johnson, L. C.....Fargo, N. D.
Johnson, Dr. A. E.....Cloquet
Johnson, E. B.....Tracy
Johnson, John.....Tyler
Johnson, Lewis.....Lake Benton
Johnson, B. G.....Granite Falls
Johnson, O. O.....Windom
Johnson, J. A.....Manfred, N. D.
Johnson, A. G.....St. Paul
Johnson, L. C.....Fargo, N. D.
Johnson, Bernt.....Westbrook
Johnson, B.....Maynard
Johnson, Alfred W.....Maynard
Johnson, E. C.....Hanley Falls
Johnson, Nicolai.....Glenwood
Johnson, E. K.....Wendell
Johnson, Bennie.....Ashby
Johnson, C. A.....Henning
Johnson, Swan.....Henning
Johnson, R. M.....Round Prairie
Johnson, Axel P.....Long Prairie
Johansen, Jorgen.....Tyler
Johnson, J. A.....Waseca
Johnson, L. A.....Elk River
Johnson, J. E.....Svea
Johnson, Andrew.....Renville
Jones, Wm.....Osseo
Jones, S.....Duluth
Jones, Mrs. O. W.....Herman
Jorgenson, Mat.....Clarkfield
Jorgenson, I. B.....Hutchinson
Joreson, Peter.....Watson
Jonson, C. J.....Lafayette
Jorgens, Sven.....Elbow Lake
Jones, Dr. M. S.....Battle Lake
Jones, Thos. C.....Russell
Judd, Oscar.....Weaver
Juerson, M. K.....Le Roy
Jungner, J. A.....Osakis

K

Katzner, Rev. Jno. B.....Collegeville
Kaer, N. C.....Mpls.
Kauth, Jacob.....Robbinsdale
Kampert, A. F.....Welcome
Karels, Anton.....Bellingham
Kamholz, Gust.....Morgan
Karels, Joseph.....Ortonville
Kapphahn, Gustavis.....Alexandria
Kanning, Earnest.....Fairmont
Kanning, D. F.....Fairmont
Kahle, Martin.....St. Paul
Kellogg, L. L.....Janesville, Wis.
Keith, John A.....Bayfield, Wis.
Keen, C. G.....New Richland
Keating, Jas.....Wabasha
Kelsan, Geo.....Tyler
Kelly, J. V.....Cottonwood
Kells, L.....Sauk Center
Kelly, W. N.....Tamarack
Key, C. L.....St. Peter
Kennedy, Dan.....Biscay
Keasling, F. J.....Zimmerman
Kennedy, J. W.....Lake City
Ketchem, C. H.....Brook Park
Keyes, E. A.....Excelsior
Kern, Harry.....St. Anthony Park
Kerrison, Niles D.....Sion, Alberta
Ketcheson, Melville.....Milnor, N. D.
Keyes, W. A.....Appleton
Kempa, G. J.....Pennock
Kern, O. J.....Stillwater
Kinkade, W. S.....Sioux Falls, S. D.
Kinnie, Michael.....Zumbro Falls
Kinim, Frank.....Kragnes
Kimball, F. W.....Austin
Kinsman, A. N.....Austin
Kimball, Rev. J. H.....Duluth
Kindall, J. J.....St. Paul
Kingsly, A. N.....Bricelyn
Kinder, L. B.....Bay Lake
Kingsbury, Mrs. Anna B.....St. Paul
Kinghorn, W. A.....Rogers
Kibler, Chas.....Bellingham
Kjerland, O. N.....Northwood, Ia.
Kjorstad, G. H.....Glenwood
Kjernstrom, Andrew.....Wegdahl
Klussmann, Ed. C.....Welcome
Klaksvik, Iver S.....Underwood
Kloos, G. H.....Chaska
Klevann, Paul P.....Starbuck
Kleberg, John.....Willmar
Klusendorf .....Welcome
Klement, R. E.....Sisseton, S. D.
Klebs, J. C., Jr.....Bertha
Kleps, Julius.....Bertha
Klemp, Rev. H. R.....Raymond
Knudsen, Rev. P.....New Duluth
Knowles, Mrs. M. A.....Excelsior
Knutson, Paul.....Fertile
Knudson, Kittel.....Hartland
Knutson, J. C.....Heron Lake
Knudsen, A. C.....Westbrook
Knuppel, Fred.....Billings
Kolisch, Aug.....St. Louis Park
Komstadius, H. A.....Hoffman
Kovar, Wansel.....Owatonna
Kording, John.....Hayfield

Kochler, D.....Hector
Kolbert, John.....Mankato
Kochmann, Julius.....Belgrade
Kough, Thos.....Taopi
Korsmo, Soren A.....Franklin
Krogman, Henry.....Crookston
Kruger, John.....Stillwater
Krog, Jens H.....Lake Benton
Kroll, John.....Lake Benton
Krueger, J. G.....West St. Paul
Kroening, Herman.....St. Charles
Krenz, Frank.....Parkers Prairie
Kral, John.....Lakefield
Kruger, Mrs. A. C.....Eden Prairie
Kraft, F. C.....Elkton
Kriesel, L. C.....Stillwater
Kroeker, H. M.....Mountain Lake
Kursee, John.....Cokato
Kurvink, Peter.....Edgerton
Kurch, E.....Duluth

L

Lake, A. H.....Black River Falls, Wis.
Lambert, R. R.....Rush City
Lamp, Albert.....Springfield
Lamb, Chas.....Baker
Lammen, J. P.....Caledonia
Lamont, Scott.....Jarretts
Lambert, G. W.....Lake Benton
Lambert, L. E.....Renville
Laage, E. A. E.....Osakis
Lahde, John Wm.....New York Mills
Lake, D. S.....Shenandoah, Ia.
Larson, Andrew.....Moorhead
Larson, L. A.....Tunbridge, N. D.
Larson, Arne.....Brookings
Larsen, C. L.....Kasson
Larson, Christ M.....Albert Lea
Larson, Edward.....Spring Grove
Larson, L. N.....Lowry
Larson, Jalmar.....Spicer
Larson, John.....Clarkfield
Larson, Mans.....Tyler
Larson, Anton.....Tyler
Lanskov, J. O.....Fountain
Larson, Chas. G.....Bayfield, Wis.
Larson, Peter.....Albert Lea
Lang, W. H.....Appleton
Larsen, Oliver.....Spicer
Lange, Henry.....Glencoe
Larson, Leonard.....Isanti
Larson, J. P.....Alexandria
Larson, Ole.....Burtrum
Larsen, C. F.....Morgan
Langenecker, Rev. G. W..Berthold, N. D.
Lang, John C.....Pillsbury
Lane, J. W.....Anoka
Larson, L.....St. James
Larson, Magnus.....Albert Lea
Lavik, E. J.....Rugby, N. D.
Latta, Walter.....Crookston
Lax, Martin.....Colo, Ia.
Lee, Henry T.....Fingal, N. D.
Lee, Geo. F.....Underwood
Leding, Edward.....Flaming
Leath, Fred.....Cleveland
Leavenworth, Prof. F. P.....Mpls.
Leightley, H. W.....Austin
Lee, Mrs. Thos. G.....Mpls.
Leas, J. H.....Cottonwood
Leach, A. D.....Excelsior
Ledum, Ever.....Elbow Lake
Lee, S.....Alexandria
LeGro, H. O.....Bertha
Lee, G. C.....Minneota
Leibold, F.....New Ulm
Leider, E. H.....Zimmerman
Lewis, K. W.....Minong, Wis
Lepine, W. E.....Welcome
Lewis, Bert.....Caledonia
Lester, Erwin.....Alpha
Leonard, Dr. L. D.....Mpls.
Lennox, Wm.....Yellow Grass, Sask.
Lesch, C. F.....Welcome
Lends, T. A.....Cottonwood
Leuze, Martin.....Stillwater
Lewis, R. J.....St. Paul
Lestrud, K. K.....Blooming Prairie
Lizotte, John.....Omemee, N. D.
Lindley, Isaac C.....Amboy
Lien, Harry A.....Montevideo
Lindsay, F. F.....Mpls.
Lilleskov, John S.....Stanton
Lindsay, J. M.....Austin
Lindblad, John.....Willmar
Libby, F. M.....Robbinsdale
Libby, Mrs. Daniel.....Robbinsdale
Linnet, Peter M.....Lake Benton
Lindstrom, Karl.....Sisseton, S. D.
Lisland, K. W.....Sebeka
Libbrand, Jacob.....Jordan
Lindquist, J.....Granite Falls
Lincoln, Will.....Fergus Falls
Lindgren, E. P.....Henning
Lind, Joe.....Verndale
Littfin, Leonard.....Winsted
Lindberg, Andrew.....Scandia
Lian, T. O.....Borup
Loegering, Aug.....Long Prairie
Long, F. B.....Mpls.
Locke, O. W.....Dodge Center
Longyear, E. J.....Mpls.
Longfellow, Levi.....Mpls.
Loose, F. W.....Luverne
Loss, H. R.....Clara City
Lovold, E. J.....Mpls.
Long, A. G.....Excelsior
Lowe, L. H.....Long Prairie
Lovelace, Wm. D.....Cottonwood
Logering, Frank.....Long Prairie
Lokke, Martin.....Grand Meadow
Lundholm, E. M.....St. Paul
Lubker, C. P.....Watertown, S. D.
Ludlow, H. J.....Worthington
Lumburg, Fred.....Mapleton
Lund, Chas. A.....Vining
Luce, Clint L.....Albert Lea
Lundquist, C. E.....Carver
Lund, M. B.....Henning
Lund, S. J.....Boyd
Lusenfield, J.....Comfrey
Lundberg, Theo. A.....Belle Plain
Lucken, K. J.....Portland, N. D.
Luchan, H. J.....Fertile
Lundgren, Mrs. E. E.....Cannon Falls
Lykken, C. T.....Dennison

M

Malberg, P. B.....Warren
Malakonsky, John.....Lockhart
Magie, W. H.....Duluth
Magnusson, Sven.....Harris
Macoun, W. T.....Ottawa, Can.
Manning, J. R.....Booge, S. D.
Malmberg, E. W.....LaFayette
Mangen, J. F.....Cannon Falls
Maloney, O. D.....Spring Valley
Maott, L. A.....Brownsdale
Magnuson, S. E.....Willmar
Manlgom, D. C.....Welcome
Mann, M. P.....Worthington
Malmsten, F. W.....Mpls
Malloy, Thomas.....Skyberg
Mantz, H. J.....Paynesville
Madson, M.....Sauk Center
Mann, C. O.....Owatonna
Manders, Mickel.....Minnesota Lake
Manderfeld, Henry.....New Ulm
Major, W.....Winnipeg, Man.
Mainz, Simon.....Hastings
Marshall, Alexander.....St. Paul
Marin, W. A.....Crookston

Marion, C.....Villard
Marks, F. C.....Marshall
Martin, Andrew.....Dodge Center
Martens, Henry.....Welcome
Martensen, R. J.....Tyler
Marden, Ezekiel.....Ashby
Mareck, Titus.....Mpls.
Marso, J. P.....Canby
Marsh, F. L.....Champlin
Martin, E. E.....Claremont
Martin, A. E.....Mpls.
Massee, A. W.....Albert Lea
Maschger, A. F.....St. Paul
Mayon, J. A.....Stewartville
Mattfeld, Henry.....Cologne
Mathisen, Geo. W.....Windom
Masselink, G. H.....Edgerton
Mather, O. R.....Madelia
Matson, M.....Kensington
Merritt, C. W.....Winona
Meacham, F. E.....St. Paul
Meilecke, O. F.....Dundurn, Sask.
Mellenthin, C. F. W.....Comfrey
Mead, A. W.....Windom
Merchant, M. F.....Ellendale, N. D.
Mesenburg, Frank.....St. Cloud
Mesenburg, Mathias.....St. Cloud
Mesenbring, Otto.....Cologne
Metag, A. P.....Morgan
Meirding, Henry.....Morgan
Metcalf, W. H., Jr.....Kimball
Meyer, Ben.....Melrose
Meyer, Henry G.....Sauk Center
Meyer, Henry.....Blue Earth
Mills, L. D.....Lake Crystal
Micklesen, John.....Luverne
Mitchell, J. E.....Luverne
Miller, Alda M.....Wheaton
Mills, R. W.....Litchfield
Miller, S. O.....Lakeville
Minsaas, E. O.....Montevideo
Mitchell, J. L.....Austin
Miller, A. M.....Harmony
Millard, F. B.....Willow River
Mitchell, D. M.....Owatonna
Miller, J. K.....Sauk Rapids
Mighton, S. R.....Winnipeg, Man.
Miner, J. E.....Mpls.
Mills, G. R.....Buffalo
Miner, Mrs. C. J.....Mpls.
Miller, A. N.....Balaton
Mitchel, Harry.....Madelia
Mittelset, D. A.....Bellingham
Miller, S. C.....Taunton
Miller, H. J.....Cologne
Mills, W. E.....Dawson
Mills, Percy.....Elk River
Miller, E. J. D.....Barlow, N. D.
Minge, Ole A.....Fergus Falls
Miller, E. B.....Mpls
Minton, J. D.....Charlson, N. D.
Misfeldt, Chas.....Ellendale, N. D.
Miks, Rev. A.....St. Michael
Mohl, Fred.....Adrian
Moeser, Frank.....St. Louis Park
Moe, I. T.....Wegdahl
Moore, Stanley.....Worthington
Moline, N. J.....Maple Plain
Moeser, Miss Mary.....St. Louis Park
Moeser, Mrs. Frank.....St. Louis Park
Moehlenbrock, Edw.....Owatonna
Montana Nursery Co.....Billings, Mont.
Moot, Mrs. A. T.....Mpls.
Moeser, Miss Flora.....St. Louis Park
Moore, O. W.....Spring Valley
Mooney, J. J.....Granite Falls
Moklev, M. S.....Battle Lake
Montgomery, W. C.....Osakis
Moore, Geo F.....Osakis
Molme, Arik.....Sauk Center
Monsen, Alfred.....Belview
Monson, A. G.....Sisseton, S. D.
Morgan, H. L.....Bradley, S. D.
Morrison, Rev. Jas. Dow.....Duluth
Morton, R.....Lamberton
Morrison, C. E.....Montevideo
Mork, T. T.....Granite Falls
Morin, T. C.....Walhalla, N. D.
Moses, J. B.....Jackson
Moses, W. W.....Tracy
Moulton, H. R.....Windom
Mosher, M. J.....Pillsbury
Munch, Mrs. Marie W.....Crookston
Mullen, M.....Campbell
Muir, R. H.....Yellow Grass, Sask, Can.
Muller, L.....Tyler
Mueller, Ferdinand.....Park Rapids
Mullin, P. T.....Hutchinson
Murray, J. W.....Excelsior
Murray, Mrs. Emma M.....Excelsior
Murphy, R. R.....Austin
Murphy, C. H.....Caledonia
Murray, Rev. D. C.....Blooming Prairie
Murray, J. B.....Marshall
Myrah, E. G.....Spring Grove

Mc.

McBroom, F. K.....Excelsior
McAdams, S. H.....Swea City, Ia.
McCain, W. A.....Hillsboro, N. D.
McCabe, Mrs. M.....Mpls.
McCarty, W. J.....Madelia
McCarty, Ed.....Madelia
McCarty, Jas.....Madelia
McCurdy, J. W. B.....Madelia
McCabe, B. S.....Le Sueur Center
McConnell, W. W. P.....Mankato
McCarthy, Mrs. Thos.....Elkton, S. D.
McConachie, N.....Perham
McCoy, Mike.....Dexter
McConnell, J. O.....St. Cloud
McCabe, M. M.....Duluth
McDermott, Rev. F. D.....Cannon Falls
McDougal, John K.....Winnipeg, Man.
McDowall, T. E.....Carson, N. D.
McFadden, Wm.....Fergus Falls
McDonald, C. E.....Owatonna
McDonald, Willis M.....Excelsior
McGuire, S. H.....Annandale
McGenough, Bernard.....Kilkenny
McIntosh, S. M.....Renville
McGann, John.....Pine City
McGuire, A. J.....Grand Rapids
McKellar, P. D.....Jackson
McKusick, Mrs. Herbert N.....Stillwater
McLean, H. H.....Rockford
McMackin, Geo.....Madelia
McLaughlin, W. W.....Madelia
McLeran, J. B.....Duluth
McLain, J. A.....Amboy
McMurran, Mrs. W. L.....St. Paul
McPhail, Malcolm.....Clandeboye, Man.
McPheeters, Miss Violet...St. Anthony Pk.
McRae, F. H.....Morgan

N

Naplin, O. A.....Wylie
Naeseth, H. O.....Kenyon
Nabseth, Anton.....Walhalla, N. D.
Nealy, Walter.....Deer Creek
Neison, Geo S.....Foxleigh, Sask.
Nelson, Nic.....Plummer
Nelson, O. L.....Wayzata
Nelson, S. B.....Luverne
Nelson, Louis.....Cokato
Nelson, Edwin.....Kerkhoven
Nelson, Peter.....Red Wing
Nelson, Hans.....Fergus Falls
Nelson, C. N.....Amo
Nelson, Helge.....Raymond
Nelson, M. O.....Mpls.
Nelson, Iver.....Cottonwood
Nelson, Lars.....Jackson
Nelson, L. S.....Slayton

Nelson, John.....Kerkhoven
Nelson, R. J.....Kerkhoven
Nelson, O. M.....Chicago, Ill.
Nelson, Oscar.....Deerwood
Nelson, F. A.....Atwater
Nelson, Peter E.....Montevideo
Nelson, Peter.....West Union
Nelson, A. P.....Maynard
Nelson, John P.....Stillwater
Nelson, Nels P.....St. James
Nelson, Gustaf.....Northland
Newenschwander, D.....Fessenden, N. D.
Nesseth, T. H.....Fertile
Nesbitt, Wm.....Ellendale, N. D.
Nicol, J. I.....Yellow Grass, Sask., Can.
Nielson, Geo.....Braham
Nieman, Charles.....Hamburg, Wis.
Niederriter, W. F.....Kenmare, N. D.
Nicholsen, M.....Mohall, N. D.
Nichols, L. M.....Good Thunder
Nott, F. J.....Howard Lake
Norby, A.....Madison, S. D.
Noffsinger, J. W.....Campbell
Nohre, S. H.....Spring Grove
Norman, Adolph.....Spicer
Noble, D. A.....Windom
Nordley, E. J.....Renville
Norris, James.....Osakis
Noerenberg, Fred..Cascade Springs, S. D.
Norlan, John H.....Frost
Northey, E. C.....Stillwater
Nowlin, J. T.....Jamestown, N. D.
Northrup, J. E.....Mpls.
North, Chas.....Steele, N. D.
Nortin, Gust P.....Pine City
Northam, C. H.....Mpls.
Nutter, F. H.....Mpls.
Nyberg, John.....Milaca
Nydahl, J. L.....Mpls.
Nygvist, Gust.....Fertile
Nystrom, Gust.....Worthington

O

Ohm, Richard.....Gully
Oddan, Ole L.....Milan
Ohloff, Chas.....Postville, Ia.
Ogilvie, James.....Blue Earth
Ohm, F. H.....Mapleton
Ogren, Axce.....White Rock, S. D.
Oliver, W. E.....Worthington
Olmstead, S. C.....St. Paul
Oleson, M.....Montevideo
Olson, Neis F.....Mpls.
Older, C. E.....Luverne
Older, F. E.....Luverne
Olson, O. A.....Kent, S. D.
Oleson, Obert.....Stillwater, N. D.
Olson, E. S.....Harmony
Olson, Edward B.....Harmony
Olson, J. B.....Willmar
Olson, Nels.....Atwater
Olafson, Jens.....Madelia
Olson, N. C.....Hoople, N. D.
Olson, N. A.....Otisville
Olson, John.....Braham
Olson, Gilbert.....Osakis
Olson, Andrew.....Ashby
Oleson, C. E.....Perley
Olsen, H. P.....St. Louis Park
Olson, E. S.....Hagan
Old, Walter A.....Mpls.
Olslund, O. N.....Beltrami
Olney, Will.....Knox, N. D.
Opheim, Andrew.....Fertile
Oredalen, Ole.....Kenyon
Orton, C. J.....Marietta
O'Neill, Wm. H.....West St. Paul
Onsgard, Orrin.....Houston
Opsata, Carl.....Bemidji
Orwoll, L. S.....Hanley Falls
Orwall, C. S.....Clarkfield
Omland, Erick.....McIntosh
Orth, Adam J.....Sauk Center
Ongstad, H. H.....Pelican Rapids
Oppegard, E. O.....Sacred Heart
Opsahl, A. H.....Orono
O'Ness, Andrew.....Perley
Osborn, John.....Dassell
Ostern, L. N.....Montevideo
Osterbeg, L. P.....Cokato
Ostlie, C. H.....Montevideo
Ott, Henry.....Sherburn
Owen, S. M.....Mpls
Owen, R.....Skyberg
Owens, J. D.....Tracy
Owen, O. J.....Watson

P

Palmer, W. A.....Hetland, S. D.
Page, Leslie.....Pleasant Grove
Pabody, E. F.....Zumbro Heights
Palm, Wm.....Cottonwood
Palm, Ludwig.....Cottonwood
Palmer, Wm. H.....Brownsdale
Palm, Carl.....Cottonwood
Palmer, J. W.....Madelia
Palleson, P.....Osakis
Palm, Sven.....Long Prairie
Parks, W. S.....Amboy
Parker, W. L.....Farmington
Parker, M.....Manly, Ia.
Parnhost, Thue.....Tyler
Parks, A. L.....Sauk Center
Parks, J. S.....Amboy
Pattridge, C. A.....Sanborn
Payne, S. D.....Kasota
Patten, H. G.....Charles City, Ia.
Patterson, Ed.....Grayling
Paulsrud, Hans.....Fertile
Pauly, Nic.....Chanhassen
Paulson, G. C.....Elbow Lake
Patton, U. T.....Osseo
Pederson, Andrew W.....Comfrey
Perry, P. H.....Excelsior
Pendergast, R. H.....Duluth
Peltier, C. D.....White Bear
Pederson, H. C.....Hopkins
Perry, Geo.....Farmington
Perley, Geo.....Moorhead
Perkins, T. E.....Red Wing
Pederson, P. A.....Beardsley
Persons, C. O.....Dundas
Peiffer, L. J.....Eden Valley
Penney, John.....Centuria, Wis.
Peck, E. F.....Austin
Pearson, Louis G.....Robbinsdale
Pengilly, Jas.....Shakopee
Penning, Martin.....New Ulm
Perot, Francis.....Mpls.
Pendergast, S.....Sauk Center
Peterson, O. M.....Albert Lea
Peterson, Andrew.....Belview
Peterson, K. K.....Rothsay
Peterson, Andrew.....Fertile
Peterson, V. C.....Renville
Peterson, O. O.....Harmony
Peterson, Christ.....Murdock
Peterson, P. H.....Atwater
Peterson, Geo. R.....Collis
Peterson, Jos.....Lake Crystal
Peterson, C. O.....Willmar
Peterson, F. J.....Waconia
Pettis, Chas.....Madelia
Peteler, Mrs. E.....Mpls.
Peterson, Axel J.....Hinckley
Peterson, Alvin.....Astoria, S. D.
Peterson, Chas. J.....Maynard
Peterson, J. N.....Fergus Falls
Peterson, Carl F.....Storden
Petersen, Paul C.....Flaxton, N. D.
Peterson, N. F.....Detroit
Petz, Charley.....Swanville
Peterson, L. J.....Olivia
Peterson, L. E.....Belview

Peterson, H. A.....Sacred Heart
Peter & Stone.....LaMoure, N. D.
Peterson, Elvin.....St. Anthony Park
Pfeiffer, Rev. Chas.....Long Prairie
Pfaender, Max.....St. Anthony Park
Pfister, J. M.....Marietta
Pfaender, Wm., Jr.....New Ulm
Pfeifer, Jos. P.....Sturgeon Lake
Pineo, W. B.....Mpls.
Pinkert, Paul.....Milbank, S. D.
Pierce, O. L.....Tracy
Pinkham, N. B.....Fargo, N. D.
Pierson, A.....Madison..
Pickle, Ralph H.....Albert Lea
Plummer, H. B.....Hawley
Plum, W. O.....Jackson
Pope, Frank L.....Windom
Pond, E. R.....Mpls
Polock, Frank L.....Glencoe
Poppler, John.....Chaska
Poopler, C. A.....Austin
Porter, J. F.....Red Wing
Polkow, Herman.....Springfield
Pond, Wm.....Madelia
Powell, Fred Wm.....Willmar
Poussin, G. W.....Onigum
Poutch, Thomas.....Good Thunder
Powers, T. S.....Grand Rapids
Potter, A. H.....Mpls.
Prucha, V.....Silver Lake
Probstfield, R. M.....Moorhead
Preston, Jas.....Luverne
Prosser, L. W.....Le Roy
Probst, Jos.....Fertile
Pray, J. W.....Mpls.
Prasser, E. M.....Gully
Prichard, Thos.....Monticello
Prentice, Chas. D.....St. Paul
Praxel, Peter.....Willow River
Putnam, E. T.....Excelsior
Puetz, Peter.....Sauk Rapids

Q

Quiring, J. J.....Mt. Lake

R

Rath, Henry J.....Pine City
Ramer, P. B.....Canton
Rasmussen, Hans.....Owatonna,
Randall, Frank L.....St. Cloud
Rankin, Prof. A. W.....Mpls.
Ray, Mrs. J. W.....Mpls.
Randall, Ira E.....Houghton, Mich.
Ramsden, J. W.....Homer
Rainy, Wm.....Welcome
Rasmusson, E. R.....Svea
Rains, Dr. J. M.....Willmar
Randenbush, Mrs. S. W.....St. Paul
Radabaugh, N. C.....Mpls.
Rabig, Andrew.....Minneota
Ray, Geo. E.....Elysian
Rasche, Gustav T.....Westbrook
Randall, M. E.....Ellendale, N. D.
Redpath, Thos.....Wayzata
Reed, A. H.....Glencoe
Reed, Axel H., Jr.....Glencoe
Reed, S. J.....Webster, S. D.
Reeder, G. S.....Sauk Rapids
Rebors, H.....Wood Lake
Read, T. M.....Excelsior
Reynolds, Dr. M. H.....St. Anthony Park
Reid, E. W.....St. Paul
Rennacker, Chas. J.....Detroit
Reynolds, N. R.....Luverne
Rendahl, H. M.....Cottonwood
Revier, Chas.....St. Peter
Reynolds, G. P.....Frontenac
Reynolds, Mayer D. E.....Edgerton
Reisdorf, B.....Browns Valley
Reil, John H.....Brownton
Renick, W. H.....Royalton
Renneke, E. A.....Arlington
Rhinehardt, Oscar.....Hillyard, Wash.
Richardson, Ira E.....New Brighton
Richardson, E. A.....Sparta, Wis.
Rice, Geo. E.....Hasty
Riehl, Jacob.....Spring Valley
Rice, C. L.....Austin
Rice, August C.....Spring Grove
Richter, Jos.....Jordan
Richard, David.....Eden Prairie
Rice, A. E.....Willmar
Richards, F. J.....Herman
Richter, A. A.....Windom
Rice, F. O.....Northfield
Rice, Carl J.....Peever, S. D.
Richardson, L. F.....Riga, N. D.
Riely, Walter.....Goodhue
Ritchie, LeRoy.....Annandale
Rindahl, J.....Fertile
Rindahl, O. L.....Fertile
Ring, J. H.....Cokato
Rislov, J. C.....Northwood, Ia.
Rivard, Phillip.....Stillwater
Ritter, C. H.....Plainview
Rixon, Chas.....St. Louis Park
Risbradt, Ed. T.....Ashby
Ringle, H. L.....Sanborn
Robinson, Reuben.....Champlin
Robertson, Prof. Wm.....Crookston
Robinson, D. W.....Houston
Roberson, Albert.....Lake City
Rogers, Clarence R.....Mpls.
Rohan, Mrs. M. A.....Mpls.
Roed, O. J.....Fertile
Rogers, E. D.....Herman
Rodecker, L. V.....St. Paul
Rodness, H. P.....Clarkfield
Rockwood, Eli.....Madelia
Rowell, H. H. S.....Mpls.
Romberg, Frank.....Sleepy Eye
Rose, John J.....Cunningham
Rougen, L. J.....Fertile
Rouke, K. H.....Spring Grove
Rouke, N. H.....Spring Grove
Rovainen, Alfred.....Park in
Rowberg, L. K.....Hanley Falls
Rooney, Thos.....Madelia
Roragen, E. P.....Fertile
Rollins, Z. T.....Kimball
Rouse, J. H.....Clarissa
Rowell, S. W.....Stillwater
Rosengren, Frank A.....Lowry
Rowell, L.....Farmington
Russell, J. A.....Rice
Ruggles, Prof. A. G.....St. Anthony Park
Ruddy, M. L.....Luverne
Rudy, W. J.....Hancock
Ruble, Chas. H.....Albert Lea
Russell, Wm.....Mpls.
Russell, Mrs. Wm.....Mpls.
Rusnaes, J. R.....Hanley Falls
Ruble, J. E.....Fairmont
Ruff, Mrs. D. W. C.....St. Paul
Rucktoeschel, Geo.....Seaforth
Rudolph, Chas.....Detroit
Ryan, T.....Minnetonka
Rye, J. A.....Harmony
Rydeem, Arthur.....Gibbon
Ryan, S. W.....Royalton
Ryden, Ed.....Lafayette

S

Salberg, K. K.....Clarkfield
Sahler, Emil.....Waseca
Sawyer, M. G.....Mpls.
Sandrock, Wm.....Rushford
Saunders, Wm.....Robbinsdale
Sawyer, Mrs. Nellie.....Excelsior
Sandford, L. L.....Skowhegan, Maine
Sargent, C. A.....Red Wing

Sanderson, Oscar.....Albert Lea
Satterly, Geo. E.....Renville
Sand, Ole O.....Elbow Lake
Sand, H. O.....Elbow Lake
Sangren, Hans.....Henning
Sandvig, H. J.....Brooten
Sandin, Fred.....Poplar, Wis.
Sartell, Mrs. Jos.....St. Cloud
Schallinger, Carl.....Hutchinson
Schiebe, Chas.....Minnetonka
Scott, Wm.....Lake Wilson
Schutz, R. A.....Le Roy
Schlemmer, A.....Chisago City
Schmidt, Julius.....West St. Paul
Schmeldecker, John.....West St. Paul
Schafer, Alex.....Shakopee
Schmidt, John M.....Victoria
Schultz, John J.....Sleepy Eye
Schotzko, F. E.....Springfield
Schaber, Earnest.....St. Peter
Scott, Wm. G.....Winnipeg, Man.
Schott, Oscar.....Franklin
Schardlow, F. C.....Montevideo
Schranty, M.....Slayton
Schwend, A. C.....Mpls.
Schoeder, Chas.....Lake Benton
Schwab, Jacob.....Anoka
Schneider, Henry.....St. Peter
Schain, O. P.....Lamberton
Scherer, Oscar A.....Mankato
Scherer, John E.....Canby
Schwarz, C. E., Jr.....Mpls.
Schneider, H. W.....Claremont
Scherlie, H. A.....Dundee
Schmidt, Ed.....Mankato
Schaumakerf, J. H.....Long Prairie
Schwandt, Wm. L.....Sanborn
Schmidt, Casper,.....Eden Prairie
Schulte, Frank.....Eagle Lake
Seilset, Albert A.....Canby
Seastrand, E.....Sheyenne, N. D.
Selvig, C. C.....Willmar
Seltz, Gust.....Waconia
Sell, H. R.....Cologne
Seiter, H. F.....Tracy
Sears, W. T.....Dawson
Sell, Chas.....Delano
Sektimum, M.....Brandon
Seem, K. H.....Fergus Falls
Seitzer, Wm.....St. Peter
Sebbert, Mrs. J. H.....Annandale
Seiler, John M.....Excelsior
Setzer, Philip.....Blooming Prairie
Severson, Frank L.....Stewartville
Severson, H. J.....Aleson, N. D.
Shaw, O. W.....Austin
Shannon, Robt.....Annandale
Shattuck, B. N.....Whalan
Shaw, Prof. Thos.....St. Anthony Park
Shepley, F. M.....Farmington
Share, J. O.....Albert Lea
Shave, A. S.....Hawley
Shaver, Clark.....Redwood Falls
Sherlock, J. B.....Merriam Park
Shepley, Mrs. E. L.....St. Paul
Shattuck, G. W.....Whalan
Shelley, T. E.....Hanska
Shuman, H. W.....Excelsior
Shipton, G. R.....Spring Valley
Simpson, Hon. D. F.....Mpls.
Simpson, Semon.....Mpls.
Sinclair, Mrs. Geo.....Mpls.
Simmons, Rob.....Morton
Simundson, A. O.....Hanley Falls
Silver, J. N.....Clarkfield
Sillnon, Frank.....Blakely
Sievert, C. E.....Hopkins
Simmons, Harold.....Howard Lake
Sinclair, C. E.....Mpls.
Sias, Edgar D.....Pomona, Mo.
Skaar, M. O.....Zumbrota
Skoglund, Walter L.....Chicago, Ill.

Skutt, J. L.....Mpls.
Skytte, C. J.....St. Paul
Skinner, J. H.....Austin
Skulstad, H. H.....Granite Falls
Skinner, Frank.....Albert Lea
Skonord, John J.....Montevideo
Skinnemoen, Ole.....Wendell
Skotterud, E. O.,.....Dawson
Skrivseth, L. T.....Crookston
Skrai, T. H.....Glyndon
Slingerland, L. S.....Kasson
Sloan, F. G.....Ellendale
Sletten, P. R.....Raymond
Slater, Richard.....White Earth, N. D.
Smith, W. H.....Farmington
Smith, J. J.....Bristol, S. D.
Smith, Judson.....Campbell
Smith, E. A.....Lake City
Smith, L. Z.....Mankato
Smith, F. C.....Plum City, Wis.
Smith, J. F.....Morgan
Smith, Alva.....Holland
Smith, John E.....Mpls.
Smith, Mrs. Abigail R.....Hamar, N. D.
Smith, W. H.....Madison
Smith, D. C.....Delavan
Smart, G. W.....Rice
Smith, Hon. John Day.....Mpls.
Smith, L. A.....Montevideo
Smith, Geo. M.....Duluth
Smith, T. T.....Redlands, Calif.
Smith, Lyman S.....Wayzata
Smith, T. C.....Lakeville
Snyder, C. E.....Preston
Snyder, Prof. Harry....St. Anthony Park
Snyder, P. B.....Plain View, Texas
Sorensen, S.....Osseo
Sohlberg, Dr. O.....St. Paul
Solem, O. A. Th.....Halstad
Soupe, Fred, Jr.....Red Wing
Sorenson, Ole.....Canton
Sorenson, S.....Buena Vista
Sonderson, O.....Spicer
Sorenson, L.....Ruthton
Sorensen, Soren F.....Bemidji
Soderberg, Albert W.....Dawson
Spates, S. R.....Markville
Sparrow, W. A.....Kasson
Sprague, Clifford.....Madelia
Sprague, John.....Madelia
Sperry, A. H.....Willmar
Spiess, Casper.....Norwood
Spangler, D. S.....Ruthton
Sprague, E. C.....Madelia
Sprung, H. F.....Ada
Sparre, Eric.....Elk River
Stalberg, P. H.....Harris
Stassen, O. H.....Redwood Falls
Stanley, D. B.....Kimball
Stain, Harry.....Crookston
Stae, Chas. R.....Duluth
Steiner, John.....Iona
Stensrud, Ole.....Watson
Steller, C. F.....Excelsior
Stevens, W. L.....Blackduck
Steen, John.....Triumph
Stein, John.....Cokato
Stenger, Rev. P. S.....Zealand, N. D.
Steffens, C. H.....Racine
Steele, G. W.....Kasson
Stevenson, S. A.....Lakeville
Steinbach, Louis.....Dorchester, Ia.
Steffensrud, Peter.....Harmony
Steffen, Wm.....Parkers Prairie
Stevenson, A. P.....Nelson, Man.
Stevens, A. G.....Edgerton
Stewart, Rev. W. J.....Minneota
Stenstrom, L. P.....Elizabeth
Stephens, E. F.....Crete, Nebr.
Stene, E. J.....Ashby
Steinberg, E. C.....Bertha
Stierberg, Christian.....Nerstrand

Stewart, M. W.....London
Steendorff, A.....Stillwater
Stenborg, J. C.....Stillwater
Stephens, R. L.....Rugby, N. D.
Street, Dr. A. H.....Albert Lea
Strander, C. C.....Crookston
Stockwell, S. A.....Mpls.
Stowe, J. M.....Davidson, Sask.
Stryker, John E.....St. Paul
Stork, W. E.....St. Paul
Strommer, Andrew .....Wegdahl
Strandness, Lamar .....Glenwood
Studlien, E. O.....Kragnes
Stifter, Mike.....Cokato
Stoltenberg, Fred.....Brookings, S. D.
Strommer, Julius .....Bagley
Stucky, W. H.....Spring Valley, N. D.
Stone, S. E.....Cannon Falls
Streever, N. J.....Lansing
Struss, Geo.....Red Wing
Stone, Mrs. Geo. C.....Duluth
Stoa, Martin.....Albert Lea
Street, Chas.....Beltrami
Strom, Otto .....Murdock
Styrlund, David .....Strip
Stromsedt, O. N.....Starbuck
Streich, Aug. .....Gaylord
Stone, Eli .....Excelsior
Stroman, Charley .....Swanville
Struble, E. L.....Mora
Stout, W. H.....Osseo
Strom, W. B.....Hector
Stone, Mrs. R. C.....White Bear Lake
Street, B G.....Hesper, Ia.
Sundeberg, Chas. A.....Worthington
Sundet, H. A.....Spring Grove
Suter, H. C.....Welcome
Sveen, Martin J.....Brockett, N. D.
Swenson, Thedor.....Isanti
Swenson, Chas.....Braham
Swanson, C. E.....Cannon Falls
Swenson, Albert .....Chisago City
Swedberg, Jas. S.....White Bear Lake
Swedberg, J. E.....Underwood
Swenson, Adolph .....Hawley
Swenson, Gunder .....Norway Lake
Swenson, Edwin .....Excelsior
Swenningson, S.....Austin
Swanson, L. R.....St James
Swenson, H.....Lamberton
Swan, Chas.....Balaton
Swenson, Halvor.....Lamberton
Swenson, C. W.....Lafayette
Swennes, Arne.....Minneota
Swanson, Theo.....Clarissa
Swift, C. W.....Sauk Center
Swanson, Chas. V.....Hinckley
Swan, J. W.....Sweeney, S. D.
Synoground, N. O. P.....Groton, S. D.
Synerbolm, C. J.....Atwater
Sydow, Richard .....Sanborn
St. John, Oscar .....Chicago, Ill.

T

Talbert, Thos.....Long Lake
Taylor, S. C.....Houston
Tassie, P. F.....Mpls.
Talcott, Mrs. A. L.....Westbrook
Taubert, M. C.....North Redwood
Taylor, B. F.....Medford
Tappen, Alfred.....Dodge Center
Taber, Wm.....Duluth
Taylor, L. A.....Belle Plain
Tarish, J. H.....Sauk Center
Tanner, U.....Cannon Falls
Tew, D. J.....Rushford
Teich, Adam.....Chaska
Tennant, Mrs. G. H.....Mpls.
Teigen, L. O.....Jackson
Teisberg, E. K.....Ashby
Thomes, Geo. O.....Mabel
Thielman, Geo.....Excelsior
Thane, G. A.....Kasson
Thelmann, Wm.....Le Sueur
Thomsen, Th. I.....Mpls.
Thomasson, Erick.....Wegdahl
Thompson, F. S.....Mpls.
Thompson, S. B.....Clarkfield
Thompson, R. C.....Langdon
Thurber, B. J.....Windom
Thurston, Frank.....Madelia
Tham, John .....Stewart
Thompson, T. K.....Minneota
Thomas, F. A.....St. Cloud
Thomson, John B.....Carlton
Thompson, Christ.....Franklin
Thompson, Henry.....Effington, S. D.
Tingley, W. J.....Withrow
Tidd, John N.....Alborn
Tisdale, M. N.....Slayton
Tillotson, Mrs. H. B.....Mpls.
Tjosvold, S. O.....Granite Falls
Tovile, P. J.....St. Paul
Townsend, Elmer.....Cottonwood
Torgerson, John.....Milan
Torgerson, H. P.....Astoria, S. D.
Torgerson, Tom.....Madison
Tollefson, Tollef.....Hanley Falls
Torstenson, L. O.....Hawley
Tomalin, W. H.....Kildonan
Tousignant, Denery.....Mendota
Tollefson, M. C.....Willmar
Torgersen, Theo.....St. Joseph, Wis.
Torkelson, E. H.....St. James
Torgerson, N. P.....Astoria, S. D.
Toslin, Alfred.....Garfield
Tollefson, M.....Ashby
Tomlinson, Wm.....Hutchinson
Torgelson, Theo.....Hagan
Trenham, N. J.....Alexandria
Truckenmiller, Will....Devils Lake, N. D.
True, Fred O.....Good Thunder
Trowbridge, C. B.....Magnolia
Traske, J. J.....Wabasso
Travenan, Otto.....Good Thunder
Trattles, L. E.....Sauk Center
Trunk, Fred.....Worthington
Trask, W. A.....Royalton
Truog, Nic.....Pillsbury
True, S. P.....Granada
Trogne, Ole K.....Numedahl, N. D.
Turner, H. H.....Northfield
Tuttle, H. B.....Tomah, Wis.
Turnbull, John .....La Crescent
Tudhope, F. A.....Glencoe
Tuve, S. O.....Fergus Falls
Turner, F.....Spring Valley
Tuthill, A. R.....Welcome
Tucker, R. S.....Lake Benton
Tucker, Mrs. J. J.....Wadena
Twitchell, W. G .....Correll
Tyrrell, T. F.....Otisville
Tyler, R. M.....Fairmont

U

Unze, Geo.....Shakopee
Ueland, L. A.....Edgeley, N. D.
Upton, J. H.....Cresco, Ia.
Urseth, Prof. H. A.....Mpls.

V

Vangen, Peter O.....Climax
Van Vliet, C.....Northfield
Van Hoesen, F. B.....Alexandria
Vallean, Dorney.....St. Anthony Park
Van Ness, Garrett.....Mpls.
Vanasek, Thos. F.....New Prague
Vasburgh, J. G....Leavings, Alberta, Can.
Van Sant, Mrs. S. R.....Mpls.
Vallon, Thos.....Wabasha
Van Slyke, Dr. F. W.....St. Paul

Vande Bogart, W. S.....Zumbrota
Vanvick, John.....Spiritwood, N. D.
Van Tuyl, C. W.....Mpls.
Vandergon, D. D.....Maple Lake
Vetter, Leonard.....New Ulm.
Veit, Fred.....Fergus Falls
Veigel, A. L.....Good Thunder
Veum, L. J.....Hoople, N. D.
Venustrom, Andrew.....Battle Lake
Veeder, C. H.....Sauk Center
Veseth, E. M.....Etter
Verplank, E. E.....New Richland
Veblen, A. A.....Stillwater
Veum, Iver J.....Hoople, N. D.
Viall, Roy.....Spring Valley
Vihlen, F. A.....Round Lake
Vigdal, S. N.....Kenyon
Vine, P. O.....Porter
Virtue, F. H.....Mpls.
Voxland, Geo. H.....Kenyon
Voight, L.....Hastings
Vrolson, J. W.....High Landing

W

Wadsworth, H.....Glencoe
Wachlin, Wm.....Faribault
Wahlgren, S. J.....Willmar
Wagnild, O. J.....Jackson
Wakefield, Dr. W.....Lake Benton
Walden, J. M.....Northfield
Walsh, J. B.....Arco
Wallace, Ira.....Madelia
Walz, M.....Perham
Wampler, A. J.....White Bear
Ward, F. A.....Pipestone
Washburn, Prof. F. L...St. Anthony Park
Ward, Arthur.....Lanesboro
Watkins, W.....Austin
Watschke, F.....Morton
Wasson, F. D.....Marshall
Waun, Mrs. T. L.....St. Paul
Ward, Edward.....Fergus Falls
Ward, Geo. H.....Carver
Warner, Richard.....Park Rapids
Wells, C. W.....Mpls.
Webster, D. C.....La Crescent
Weld, J. O.....Mound
Wedge, R. C.....Albert Lea
Welp, Jos.....Wabasha
Welis, R. P.....Herman
Wentworth, W. C.....Spring Valley
Wells, Rollin J.....Sioux Falls, S. D.
Welch, Clarence H.....Lynd
Weflen, G. H.....Granite Falls
Weitzel, J. J.....Wilmont
Weaver, J. F.....Kilkenny
Weld, D. U.....Windom
Webb, H. L.....Glyndon
Westerholm, M.....Hutchinson
Westergard, P. J.....Belgrade
Westaver, Loren.....Garden City
Werland, J.....Clara City
Werner, S. P.....Browerville
Westfield, Kasper.....Canby
Wheeler, Miss Gerda.....Sandstone
Whetstone, Dr. Mary S.....Mpls.
Wheeler, A. H.....West Concord
Whiting, Geo. H.....Yankton, S. D.
White, Wm. G.....St. Paul
White, R. A.....Twin Lakes
White, Miss Emma V.....Mpls.
Whitney, C. D.....Clearwater
Whipps, L. L.....Le Sueur Center
Wickstrom, A. E.....Anoka
Wichelman, F. C.....Stillwater
Wiber, C. H.....Lewiston
Wicklund, John.....Kandiyohi
Widman, J.....Woodstock
Wieland, H. P.....Fisher
Wilson, A.....Portage la Prairie, Man.
Wilkus, A. J.....Faribault
Wilson, Daniel.....Caledonia, N. D.
Wilson, Oscar.....Underwood
Wilbur, D.....Floyd, Ia.
Wilkinson, Mrs. C. B....Cheyenne Wells, Colo
Wilson, E. A.....Atwater
Wilwerding, Anton.....Freeport
Wilson, R. D.....Winnipeg, Man.
Williams, L. C.....Welcome
Willard, Bert.....Sisseton, S. D.
Williams, G. A.....Winnebago
Wilcox, Mrs. E. W.....White Bear Lake
Wilson, Jas. A.....Crookston
Winkley, F. C.....Mpls.
Wishart, J. N.....Mapleton
Wise, H.....Appleton
Wingate, Mrs. W. S.....Mpls.
Witte, H. L. F.....Minnetonka
Winslow, B. H.....Kimball
Wise, Harry.....Crookston
Wittmaack, J. H.....Roseau
Witzel, John.....Mt. Carmel, N. D.
Wolter, Fred.....St. Charles
Wold, John K.....Blooming Prairie
Wolverton, N.....Brandon, Man.
Wold, K. O.....Austin
Wogen, E. B.....Spring Grove
Wold, Cere.....Elbow Lake
Woehler, Henry.....Arlington
Woolstencroft, B. W.....Slayton
Wood, Jos.....Windom
Wood, W. B.....Brookings, S. D.
Woodle, C. F.....Austin
Wood, A. L.....Rothsay
Woodhall, W. A.....Madelia
Wright, A. N.....Owatonna
Wright, E. A.....Montevideo
Wright, A. V.....Mine Center, Mont.
Wright, W. G.....Hastings
Wrigley, Francis.....Granite Falls
Wulf, J. W.....Johnson
Wurdus, J. W.....Holton, Wis.
Wye, A. H.....Moorhead

Y

Young, F. F.....Duluth
Yegge, C. M.....Alpena, S. D.
Yahnke, Walter.....Winona
Yost, John.....Murdock
Yoerg, Anthony.....St. Paul
Young, C. A.....Pierpont, S. D.
Youngberg, C. A.....Cannon Falls
Yates, Isaac.....Madelia
Yeager, C. H.....Coal Harbor, N. D.
Yeager, J. H. W.....Sanborn
Young, A. P.....Otisville
Young, Jas. L.....Duluth
Young, W. E.....Owatonna

Z

Ziebarth, L. J.....Osseo
Zuercher, Fred.....Excelsior
Zitman, Rev. Aug.....Morristown
Zahler, B. J.....Waconia
Zander, Peter.....Morgan
Zanzen, C. H.....Darfur
Zimiel, A.....Zimmerman
Ziegler, C. E.....Boyd
Zarth, Carl.....Jordan

HONORARY MEMBERS FOR 1907

Emerson, Prof. R. A.....Lincoln, Neb.
Blair, Prof. J. C. .....Urbana, Ill.
Moyle, W. J.....Union Grove, Wis.
Synoground, N. O. P. .....Groton, S. D.
Secor, Eugene.....Forest City, Ia.
Clemons, L. A. .....Storm Lake, Ia.
Scott, Wm. G.....Winnipeg
True, C. H. .....Edgewood, Ia.

LIFE MEMBERS

Alin, Alex .....Fullerton, N. D.
Anderson, G. A. .....Renville
Andrews, C. H. .....Faribault
Arnold, L. B. .....Duluth
Baker, Geo. A. .....Janesville
Boushka, Frank .....Biscay
Briard, F. W. .....Gaylord
Briggs, A. G. .....St. Paul
Burtzlaff, Paul .....Stillwater
Cady, Le Roy .....St. Anthony Park
Cashman, M. R. .....Owatonna
Cashman, T. E. .....Owatonna
Crisman, Charles E. .....Ortonville
Christensen, P. C. .....Fairmont
Clark, Chas. B. .....Mpls.
Clarke, Fred H. .....Avoca
Cline, Wm. .....Bertha
Cummins, J. R. .....Eden Prairie
Cutting, F. E. .....Byron
Daniels, R. L. .....Stillwater
Danforth, Wm. .....Eau Claire, Wis.
Davey, Dr. Flora M. .....Mpls.
Dickerson, Wm. .....Elk Point, S. D.
Doughty, J. Cole .....Lake City
Dressler, Otto W. .....Mpls.
Dunsmore, Henry .....Olivia
Dunwoody, Wm. H. .....Mpls.
Durbahn, A. .....Sleepy Eye
Eddy, W. H. .....Howard Lake
Eklof, John .....Cokato
Eliason, M. A. .....Artichoke Lake
Engman, Nels.....Mpls.
Evans, Sheldon J. .....La Crescent
Fletcher, F. F. .....Mpls.
Foster, Wesley S. .....Milaca
Fournelle, Peter .....White Bear Lake
Franklin, A. B. .....Mpls.
Fulton, T. C. .....White Bear Lake
Gjemse, L. J. .....Cannon Falls
Gjestrum, M. L. .....Mankato
Hagen, O. W. .....Sleepy Eye
Halbert, Geo. T. .....Mpls.
Hall, D. S. .....Buffalo Lake
Halvorson, Halvor .....Hills
Hannah, Robt. .....Fergus Falls
Harris, E. E. .....Onlaska, Wis.
Harris, F. I. .....La Crescent
Harrison, Rev. C. S. .....York, Neb.
Hart, W. H. .....Owatonna
Hawley, T. C. .....Old Orchard, Mo.
Hawkinson, Chas. .....Excelsior
Hermanson, Herman .....Hopkins
Herrick, U. G. .....Mpls.
Hilstad, O. C. .....Nicollet
Hobart, A. W. .....Mpls.
Hoverstad, T. A. .....Dennison
Howard, J. A. .....Hammond
Hunter, C. C. .....Mpls.
Irish, Prof. H. C. .....St. Louis, Mo.
Jerabek, J. S. .....Silver Lake
Johannesson, L. .....Beltrami
Johnson, Gust. .....Excelsior
Johnson, A. A. .....Winnebago
Kankel, Otto .....Fertile
Kennedy, J. H. .....Sheyenne, N. D.
Korista, J. S. .....Silver Lake
Larson, C. L. .....Winthrop
Larson, Louis .....St. Louis Park
Leonard, Geo. S.....Audubon
Lien, Thos. J. .....Delavan
Loring, A. C. .....Mpls.
Loring, C. M. .....Mpls.
Loring, Mrs. C. M. .....Mpls.
Loose, E. C. .....Luverne
Lowry, Thos. .....Mpls.
Lund, I. E. .....Hopkins
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